

2005

The development of the revised version of the Educational Outcome Expectancy Scale

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The development of the revised version of the Educational Outcome Expectancy Scale

by

Brian Patrick Tilley

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Psychology (Counseling Psychology)

Program of Study Committee:
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Iowa State University
Ames, Iowa
2005

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For the Major Program

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ACKNOWLEDGEMENTS

I would like to thank others certainly before I would even begin to take any credit for this myself. Patrick and Ellen Tilley are two of the most wonderful and supportive people alive. My parents have been devoted to doing whatever it takes to help me achieve my dreams and for that I am eternally grateful. Their hard work has enabled me to soak in a wealth of experiences that many people are not so fortunate to have. It is because of them that I am where I am today. It is because of them that I am driven to succeed. And it is because of them that I hope this graduate experience is only the beginning.

I would also like to thank Dr. Lisa Larson, my major professor, who has been guiding me since Day One of graduate school. Her patience in teaching me the techniques of research and scientific writing is much appreciated. Beyond intellectual guidance, Lisa has been there for me in some tough situations and has always been able to treat my mistakes and my achievements with equal support.

In addition, I would like to thank the dissertation committee for their understanding and patience. Dr. Fred Borgen and Dr. Fred Lorenz have been through the thesis process with me before and I thank them for returning for another go-round. I also appreciate the input of Dr. Meifen Wei and Dr. Doug Epperson for the dissertation, as well as Doug's guidance in choosing and obtaining an internship site—the place where I confronted my next challenge in my career development process.

Thank you all.

ABSTRACT

Lent, Brown, & Hackett's (1994) social cognitive career theory (SCCT) proposes that the three processing mechanisms that underlie the development of educational interests, persistence, and achievement are self efficacy (SE), outcome expectancies (OEs), and goal representations. The researcher had two goals for this paper: to revise a measure of educational outcome expectancies, the Educational Outcome Expectancy Scale-Revised (EOE-R; Springer, Larson, Tilley, & Gasser, 2001) and obtain initial validity and reliability estimates for the measure. The researcher conducted an exploratory factor analysis and provided reliability estimates. He also obtained estimates of convergent validity for the measure using a measure of college SE, the College Self-Efficacy Instrument (CSEI; Solberg, O'Brien, Villareal, & Kennel, 1993) and a measure of personality, the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press). In addition, he obtained an estimate of criterion validity using a measure of satisfaction for college students, the Your First College Year measure (YFCY; Astin, 1993). The results supported a 23-item single-factor model with internal consistency of $\alpha=.93$. The results also supported convergent and criterion validity estimates of the EOE-R with expected significant correlations with the CSEI, with some primary scales of the MPQ, and with the YFCY. The results supported the positive correlation between educational OE and college SE as theorized in SCCT and found in the literature. The results added to the relative lack of literature by supporting a relation between educational OE and some facets of personality. Finally, results also support the positive relation between OE and satisfaction as conceptually discussed (Bandura, 1986; Lent et al., 1994). Additional Analyses included exploration of a six-factor solution for the EOE-R and EOE-R scores by college major.

CHAPTER 1: INTRODUCTION

According to Lent, Brown, & Hackett's (1994) social cognitive career theory (SCCT), outcome expectancies (OEs) are personal beliefs about probable outcomes. Lent et al.'s SCCT is based on the application of social cognitive theory (SCT; Bandura, 1986) to the career area. According to SCT, people act partially on the beliefs they have about the possible consequences of their actions. The areas in which these consequences can be manifested include, but are not limited to, physical, social, self-evaluative, and educational outcome expectancies. In other words, OEs are domain-specific.

For the most part in the literature, the preceding statement has been taken quite literally. Outcome expectancies have been studied in a very domain-specific fashion even within the educational area. Such lines of study include OE domains like mathematics and science. The literature includes multiple specific academic subject areas in the study of educational OE but does not include the context in which these academic subjects are completed. That is, there is little to no mention of outcome expectancies for the completion of a college degree. The researcher argues that a well-defined domain of college degree outcome expectancies can be informative to the study of SCCT without having to be restricted to each specific subject. Rather, college degree OE—expectations linked to the pursuit of a bachelor's degree regardless of academic subject (major)—is an OE in and of itself and can be studied in much the same way as mathematics OE and science OE. Because college degree OE is not split by academic subject, it is closer to an overall educational OE than the academic subject-specific OEs: it takes into account the expectations of the student for her or his degree regardless of the area of study and, in addition, takes into account the expectations she or he has for the cumulative effect of her or his education.

With respect to SCCT, OEs are important because they underlie the functioning of the model. Another important piece of the SCCT model is self-efficacy (SE). Unfortunately, whereas SE measures abound, OE measures do not. For example, a search of the recent literature for OE measures that met SCCT's definition of outcome expectancy yielded five articles that contained potential educational OE measures. This figure is based on the requirements that the scale must tell the researcher something across items (in other words, there must be some form of summing procedure that yields results informative of an overall educational OE of the participant) and it must be applicable to a wide range of people, especially college students. An appropriate scale would be tailored to college students' level of educational attainment.

There have been relative few attempts to capture the construct of educational OE in a format applicable to a wide range of subjects. Brooks and Betz (1990) created a measure of occupational values, but that measure was based on examining each item individually rather than summing across the items. Multiple papers have proposed and developed outcome expectancy scales that maintain utility within a smaller range than desired for the purposes of this paper. Riggs, Warka, Babasa, Betancourt, and Hooker (1994) created the Personal Outcome Expectancy Scale. Even though this scale has been factor analyzed, it still does not meet the criteria for an educational OE measure because it is intended for people already in the workplace and is not appropriate for college students.

Another measure (Bores-Rangel, Church, Szendre, & Reeves, 1990) provided outcome expectancy scores based on a ranking of the most important value—or, in the language of Lent et al. (1994), consequences you desire—out of a list of values. Hackett, Betz, Casas, and Rocha-Singh (1992) developed the Outcome Expectations Scale.

Unfortunately this scale is limited in its focus to successfully completing a bachelor's degree in engineering. Other related educational OE measures have focused in subject-specific outcomes (e.g. Fouad & Smith, 1996; Fouad, Smith, & Enochs, 1997) so those measures were not considered.

For purposes of the current study, the realm of choice is the pursuit of an undergraduate degree. Again, the specifics sought by the current research are that the scale must inform the researcher across items, be tailored to the student's level of educational attainment, and be applicable to a wide range of participants. The lone measure that attempts to capture the construct of educational OE using the preceding criteria is the Educational Outcome Expectancy Scale (EOE; Springer, Larson, Tilley, & Gasser, 2001). The EOE is a six-item Likert-type scale to assess the results an individual expects from his or her bachelor's education. The six items allowed the scale to completely reflect the Holland RIASEC dimensions. The scale showed promise as single factor (educational OE) as supported by loadings provided in the Springer et al. (2001) paper. Tilley (2002) found validity for the EOE concurrently with academic self-efficacy (SE), as OEs and SE were correlated, as they should have been. He also found discriminant validity, as the EOE predicted persistence in pursuing an education but academic SE did not.

The EOE as it stands needs changes. As noted above, Tilley (2002) found support that the EOE represented educational OE well and discriminated it from academic SE and the EOE factor analysis showed support for the EOE as a single factor measure of educational OE. However, there are concerns that a measure that is six items long is not enough to fully capture the construct of educational OE, especially given the theory described earlier in the introduction—namely that a measure of overall educational OE in college students should

not only measure the expectations they have in academic areas as the EOE does, but also focus on the overall expectations surrounding the completion of a college degree. As one would expect, additional concerns related to the addition of items such as the continued ability of the measure to represent a single factor (educational OE), the cohesiveness of the revised instrument, and multiple tests of validity also became apparent. These concerns are discussed in detail later in the introduction.

The purpose of this study is to refine the development of the EOE to create a revised version of the measure. The development of any measure includes multiple stages. First, new items were added to the EOE for the reasons described in the preceding paragraph: to more fully capture the construct and add items specific to college degree expectations. The items that exist were supplemented by additional items that addressed similar areas of educational OE. Other items were added as “dummy” items to serve as an indicator of the participant’s attention to the task.

Second, initial estimates of construct validity were determined. Construct validity is the extent to which a test represents the construct it purports to measure (Messick, 1995). The construction of a measure of educational OE is subject to the results of a factor analysis, which measures the ability of the items of a measure to capture a single construct. The EOE-Revised (EOE-R) was factor analyzed of a single-factor (i.e. single construct) measure to test whether there was evidence of a single, coherent factor. That factor is educational OE.

Third, internal consistency was computed. Internal consistency can be seen as the interrelatedness of a set of items. It is important for a scale to exhibit internal consistency because it is an indicator that the measure is reliable, which is a necessary trait if the measure is to be used multiple times in varying situations. High reliability scores indicate that the

measure is consistently tapping a construct, not merely picking up on trends in error variance. Developers of measures want scores to vary systematically, not randomly, as is the case in an inconsistent measure at the mercy of error. Beyond the desire to have consistent results, an internally consistent measure is valuable because the results of a measure are meaningless if they are not indicative of the intended use of the measure but, rather, error.

One of the most common measures of internal consistency is coefficient alpha (α). High values for coefficient alpha denote commonalities and low uniqueness among items (Cortina, 1993). As noted above, it is necessary for a measure intended to capture one construct (educational OE) to have one factor (also educational OE). Though it may not be necessary for an internally consistent measure to be unidimensional (i.e., a one-factor measure), it *is* necessary for a one-factor measure—or any reliable measure, for that matter—to be internally consistent. Therefore, the validation of the Educational Outcome Expectancy Scale-Revised (EOE-R) includes obtaining a value for coefficient α that supports the claim that the EOE-R is internally consistent.

Fourth, initial criterion validity estimates are provided. Criterion validity is an assessment of the relation between the measure and other criteria (Kaplan & Saccuzzo, 2001). More specifically, testing for the criterion validity of a measure involves the separate measurement of the criterion used to assess the construct. The criterion included for purposes of testing criterion validity is college satisfaction. Students with higher educational OEs should be more satisfied with college. Bandura (1986) provided rationale for why educational OE might be studied in conjunction with the variable of satisfaction. In his 1986 article, he broke OEs into several classes. Along with the classes of social and physical OEs was the anticipation of self-evaluative outcomes. Bandura (1986) stated that the anticipation

of such self-evaluative outcomes may importantly affect career behavior. In other words, outcome expectancies are related to satisfaction. In SCCT, the hypothesis 11A states that educational OE should be positively related to reinforcing consequences that one has directly experienced. One of those reinforcing consequences would be satisfaction with the college experience. No one has tested this hypothesis in educational OE domain.

Finally, the researcher provided convergent validity estimates. Convergent validity is established when the scores on the measure in question are correlated with scores on a measure of a related construct. As noted at the outset, both outcome expectancies (OEs) and self-efficacy (SE) underlie the functioning of SCCT. The two constructs have been shown to be positively and moderately correlated in prior research (e.g., Brown, Lent, & Larkin, 1989; Lent, Brown, & Gore, 1997; Lent, Brown, & Hackett, 2000; Wheeler, 1983). Due to such evidence, it stands to reason that a measure of a specific OE should be positively and moderately correlated with a measure of a similar type of SE. Because college education is the domain, it also stands to reason that the SE selected reflects that level of specificity. The EOE should be positively and moderately correlated with a measure of college-specific SE.

Convergent validity was also examined concerning the overlap of OEs and personality. Therefore, the researcher examined EOE-R scores in the context of personality indices. As will be discussed in the literature review, a link between personality and OEs has been established but not examined extensively as of yet. The researcher included a measure of personality, Tellegen's Multidimensional Personality Questionnaire (MPQ; 1982; Tellegen & Waller, in press) as an attempt to establish that link. The prominent expected positive correlations are between high scores on the EOE-R and the MPQ scores on Well-Being, Achievement, and Control. The preceding MPQ scores were chosen as scores likely to

be moderately and positively correlated with EOE-R scores because the researcher believed that they represented qualities that are likely to be present in successful college students, much as high EOE-R scores should be. The expected negative correlation is between high scores on the EOE-R and the MPQ score of Stress Reaction. The preceding MPQ score was chosen as likely to be moderately and negatively correlated with EOE-R scores because the researcher believed that it represented qualities that are likely to hinder success in college students, and therefore should not be correlated positively with EOE-R scores. The researcher stated above the reasoning for studying educational OE in conjunction with personality indices: exploration.

Again, the entire process discussed above is driven by one goal: the development of a reliable and valid measure of educational outcome expectancies. The paucity of educational OE measures alone is enough to incite the researcher to attempt to continue to develop and validate a measure of educational OE. It is important for SCCT to have reliable and valid measures of educational OE that cut across academic domains. The implications for studying and supporting SCCT are obviously linked to the development of reliable and valid OE measures. According to SCCT, educational OE is important in the development of interests, the career choice actions a person would make, and the extent to which a person would persist in career-relevant behaviors (Lent et al., 1994). The endeavor should be a priority for advancing SCCT. It is by addressing and studying these concerns that the field will advance understanding of the interplay between college students' overall educational OE and career development, choice, and persistence as posited by SCCT.

The researcher used an alternate format for presenting the dissertation. The major change is in Chapter 4. Chapter 4 is traditionally the section that reports the results. In the

alternate format, Chapter 4 is a manuscript draft, a more succinct version of the dissertation prepared according to the standards used in manuscript submission. The information that would have been covered in Chapter 4 of the traditional format, i.e. the results of the study, is still covered in the alternate format. The first part of the results is covered in the “Results” section of Chapter 4 of the dissertation and the second part—the additional analyses—is covered in Chapter 5 of the dissertation.

CHAPTER 2: LITERATURE REVIEW

The main purpose of the current research is the development of a reliable and valid measure of educational outcome expectancies. Therefore the following areas of discussion are included to build the case not only for what makes a reliable and valid measure of educational outcome expectancies but also for how such a measure should be tested for said reliability and validity.

The basic premises for the latter notion were covered in the second half of Chapter 1. In Chapter 2, the researcher first presents the foundation of the research, social cognitive theory (SCT; Bandura, 1986) and social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) as mentioned at the start of Chapter 1. From that foundation, the researcher builds a definition of the main construct and focus of the current research, outcome expectancies (OEs), specifically educational OE. The researcher also describes the role of OE in the study of SCCT in the extant literature. That role is usually in relation to self-efficacy (SE), the SCT construct that appeared most in the literature. Following this, the researcher examines the existing measures of educational OE in search of an appropriate measure for the purposes of the current research. Additionally, as part of the literature review, the researcher examines the research on areas that have been theoretically linked to educational OE but have been rarely studied. These areas are personality and satisfaction as an outcome variable.

The current research is dedicated to instrument development. However, part of Chapter 1 is not represented in Chapter 2: the creation and addition of items for the measure and the subsequent factor analysis and reliability estimates generated by the researcher. But, as noted in the preceding paragraph, the goal of examining the areas of OEs in relation to SE,

personality, and satisfaction is the establishment of validity estimates for a measure of educational OE, namely the EOE-R. Thus the current chapter will include a review of the literature relevant to the constructs included in the validation process as well. Chapter 3, which is primarily the presentation of the experimental methods and analyses, will cover the item creation and measure revision process (including factor analyses) along with reliability estimates generated by the researcher. The literature review begins with the aforementioned foundations of educational OE, the main construct of study in the current research; those foundations are SCT and SCCT.

Social Cognitive Theory and Social Cognitive Career Theory: A Brief Overview

Bandura's (1986) social cognitive theory (SCT) is based on the assumption that there are three interrelated factors responsible for a person's actions. The model is known as the model of triadic reciprocity. This model consists first of the person factor. The person factor includes cognitions, feelings, and motivations. The second part of the model is environmental context such as the surroundings of the person. This is the state of the current surroundings of the person. The third part of the model is the individual's behavior. The prevailing theoretical stance in the years leading up to Bandura's SCT was that current behavior was a function of the interaction between people and their environments and their past behavior. The difference with social cognitive theory was this theory of triadic reciprocity: that each variable affected and was affected by the other.

Lent, Brown, & Hackett's (1994) social cognitive career theory (SCCT) is based on the application of social cognitive theory (SCT; Bandura, 1986) to the career area. One of the main processes underlying the functioning of SCT, and therefore fundamental to SCCT, is outcome expectancies (OEs). The major point made in the Lent et al. (1994) article is the

implication of SCT in the career and academic domains. Therefore, the research based on SCCT has focused on both of these domains.

Outcome Expectancies

Outcome expectancies (OEs) are personal beliefs about probable outcomes. According to SCT, people act partially on the beliefs they have about the possible consequences of their actions. The areas in which these consequences can be manifested include, but are not limited to, physical, social, self-evaluative, and educational outcome expectancies. Therefore OEs are domain-specific.

Furthermore, the construct of OE incorporates values. Lent et al. (1994) discuss outcome expectancies as something people develop for activities that they value; people are not likely to bother developing OE for activities in which they have little investment (this recalls the nature of OE as a construct that is fundamentally tied to specific activities). In other words, OEs reflect values.

Outcome expectancies have been studied in a very domain-specific fashion even within the educational area. Such lines of study include OE domains like mathematics and science. The literature includes multiple specific academic subject areas in the study of educational OE but does not include the context in which these academic subjects are completed. That is, there is little to no mention of outcome expectancies for the completion of a college degree. The researcher argues that a well-defined domain of college degree outcome expectancies can be informative to the study of SCCT without having to be restricted to each specific subject. Rather, college degree OE—expectations linked to the pursuit of a bachelor's degree regardless of academic subject (major)—is an OE in and of itself and can be studied in much the same way as mathematics OE and science OE. Because

college degree OE is not split by academic subject, it is closer to an overall educational OE than the academic subject-specific OEs: it takes into account the expectations of the student for her or his degree regardless of the area of study and, in addition, takes into account the expectations she or he has for the cumulative effect of her or his education.

Outcome Expectancies and SCCT

Whereas the model of triadic reciprocity, as discussed on the opening page of the literature review, was the focus of Bandura's 1986 paper, it was the mechanisms that underlie the functioning of the model that had a great influence in the field of vocational psychology. Social cognitive career theory (SCCT; Lent et al., 1994) elaborates on Bandura's model by discussing the main three processing mechanisms that influence the functioning of the triadic reciprocity model in forming career interests, making career decisions, and performance and persistence in education: self-efficacy, outcome expectancies, and goal representations.

Self-efficacy (SE) is defined in Lent et al. (1994) as the beliefs about one's ability to perform in a given domain in the near future. The nature of this construct is dynamic; it can develop over time. According to SCT, people's abilities in an area are best realized and manifested when they are high in efficacy in that area. In other words, they are more likely to perform at a level most closely matching their abilities when they have high efficacy beliefs about those abilities.

Outcome expectancies (OEs) are personal beliefs about probable outcomes. According to SCT, people act partially on the beliefs they have about the possible consequences of their actions. The areas in which these consequences can be manifested include, but are not limited to, physical, social, self-evaluative, and educational outcome expectancies. Like SEs within a given domain, OEs can be domain-specific as well.

Finally, goal representations are a determination to engage in a particular activity. In SCCT, goal representations evidence an exercise of forethought. An example of a goal representation would be a career plan. To the extent that one develops goal representations, she or he is creating a clearer picture of what she or he wishes to achieve. Proponents of SCCT believe strong goal representations are correlated with actually accomplishing goals.

Self-efficacy, outcome expectancies, and goal representations are posited by SCCT to be related in numerous ways. The relations among these three variables play a large role in determining the functioning of the triadic reciprocity model. Specifically as it pertains to the current study, research has shown that outcome expectancies are moderately related in the educational domain (e.g., Brown et al., 1989; Lent et al., 1997).

Measurement of Outcome Expectancies

The number of OE measures is quite small. Compared to, for example, OE's more prevalent companion construct, self-efficacy, the number of OE measures seems even smaller. An SCCT-based measure of OE seems as if it would be the ideal choice for the current research. While such a choice is grounded in theory, it could possibly be short-sighted in that it is too specific or narrowly defined. It is with this in mind that the researcher set out to find suitable measures of OE: reliable measures that treat OE as a unitary factor and, for the purposes of the current research, focus on the educational domain.

The following section reviews the existing measures of OE in the educational domain. The researcher used the criteria that the measure must define OE as it is defined in SCT and SCCT, rather than merely using the words "outcome" or "expectancy" in the title or measure description. Furthermore, the measure must have been studied in a way that would

indicate that it is useful in the educational domain. Studies that claimed applicability to the educational domain but had only been studied in the area of career choice or career decision were omitted.

Five articles contained potential educational OE measures. This figure is based on the requirements that the scale must tell the researcher something across items (in other words, there must be some form of summing procedure that yields results informative of an overall educational OE of the participant) and it must be applicable to a wide range of people, especially college students. An appropriate scale would be tailored to college students' level of educational attainment. Only one of the five studies met these criteria.

The Educational Outcome Expectancy Scale (EOE). Springer, Larson, Tilley, and Gasser (2001) presented a six-item Likert-type scale to assess the results an individual expects from his or her education. This scale was originally developed by Larson in the 1980s based on her work with gifted adolescents (e.g., Larson & Borgen, 2002)

The six items allow the scale to completely reflect the Holland RIASEC dimensions. The scale showed promise as single factor (educational OE) as supported by factor loadings provided in the two samples presented in the Springer et al. (2001) paper. Springer et al. (2001) also reported adequate six-week test-retest reliability. Tilley (2002) found validity for the EOE concurrently with academic self-efficacy (SE), as OEs and SE were correlated, as they should have been. He also found predictive validity, as the EOE predicted persistence in pursuing an education one semester later.

Other Measures of OE. There have been relative few attempts to capture this construct in a format applicable to a wide range of subjects. Brooks and Betz (1990) created

a measure of occupational values, but that measure was based on examining each item individually rather than summing across the items. Multiple papers have proposed and developed outcome expectancy scales that maintain utility within a smaller range than desired for the purposes of this paper. Riggs et al. (1994) created the Personal Outcome Expectancy Scale. Even though this scale has been factor analyzed, it still does not meet the criteria for an educational OE measure because it is intended for people already in the workplace and is not appropriate for college students.

Another measure (Bores-Rangel et al., 1990) provided outcome expectancy scores based on a ranking of the most important value—or, in the language of Lent et al. (1994), consequences you desire—out of a list of values. Hackett, Betz, Casas, and Rocha-Singh (1992) developed the Outcome Expectations Scale. Unfortunately this scale is limited in its focus to successfully completing a bachelor's degree in engineering. Other related educational OE measures have focused in subject-specific outcomes (e.g. Fouad & Smith, 1996; Fouad et al., 1997) so those measures were not considered.

Whereas it would appear that the EOE is a lock to use in the study of educational OEs, there are problems with the instrument. Part of the appeal of the EOE is based on the features of the measure such as the unitary factor and the relatively short length. However, it appears to the researcher that the EOE should be revised to reflect the range of the educational OE construct. The researcher proposes to do this by adding multiple items to reflect a variety of interest areas (as suggested by Holland's RIASEC hexagon) rather than the current state, which only represents each facet of the RIASEC with one item. Furthermore, the researcher is interested in establishing construct validity with the longer

measure so that the EOE-R may retain its original value as a measure encompassing a unitary factor, i.e., educational outcome expectancies. It is hard to argue that there is even a chance of accepting the null hypothesis that the instrument is not internally consistent when there are only six items. In addition, there is the possibility of randomly answering the items in such a short measure, especially when RIASEC codes—as intended by the original version—are represented by merely one item. In order to truly test the ability of the instrument to capture the construct in a reliable and consistent manner, more items would have to be added. Still, the EOE-R is the most promising of the preceding measures. With this in mind, the researcher moved forward with the goal of establishing the EOE-R as a reliable and valid instrument for the measurement of educational OE.

Relations Between Outcome Expectancies and Other Constructs

As noted previously, besides the development of a valid and reliable measure of educational OE, the researcher is interested in the relations between OE and other variables. Those variables take the shape of other constructs that have either been proposed to be related to OE (satisfaction), been shown in previous research to be related to OE (self-efficacy), or have been studied minimally in conjunction with OE (personality). The researcher discusses each of the preceding variables in the following section.

Self-Efficacy

Two of the main processes underlying the functioning of SCT, and therefore fundamental to SCCT, are self-efficacy (SE) and OEs. Self-efficacy (SE) is defined in Lent et al. (1994) as the beliefs about one's ability to perform in a given domain in the near future. The nature of this construct is dynamic; it can develop over time. According to SCT, people's abilities in an area are best realized and manifested when they are high in efficacy in

that area. In other words, they are more likely to perform at a level most closely matching their abilities when they have high efficacy beliefs about those abilities. Self-efficacy is an area that has drawn a great deal of attention in the literature. Whereas SCT has served as the theoretical underpinnings of SCCT, SCCT has served as the basis for several SE and OE studies. In a way, SE research has served as a trailblazer for research on the OE construct.

According to SCCT, SEs and OEs are related in that they each play an individual role in the triadic reciprocity model. According to SCT, people act partially on the beliefs they have about the possible results of their actions. Like SEs within a given domain, OEs is domain-specific as well. The umbrella under which these domains exist, for the purposes of this study, is education, or academics. What follows is a review of the relation between SE and OE in the educational domain.

Intersection of SE and OE in Educational Domain

The review below addresses the research existing with respect to SE and OE in the educational domain. The review conducted for this section yielded nine articles that matched the criteria of focus on the education domain using SE and OE according to the specifications of SCCT. There is a relatively large proportion of empirical research in this area; in fact, all of the articles presented in this section are empirically based. Almost mirroring the large proportion of empirical research is the large proportion of mathematics-related studies conducted in the area, just as in the preceding section. Here, mathematics outstrips all other single subjects as having the most SE-OE studies ($n=4$).

Bores-Rangel et al. (1990) provided strong support for SCCT views of career and academic SE. Bores-Rangel et al. (1990) found moderate relations between academic SE and

OE and academic achievement (although academic achievement was not measured using GPA). This lends further support to the link between academic SE and academic performance discussed in Brown et al. (1989) and Lent et al. (1984).

Specific self-efficacies take on many forms, one of which is an educationally domain-specific form, such as reading and writing self-efficacy. Shell, Colvin, & Bruning (1995) examined self-efficacies and outcome expectancies for reading and writing concurrently at several grade levels using measures for both of the above constructs as well as a reading and a writing assessment. They found that students' self-efficacy was strongly and positively correlated to their performance on reading and writing assessments and their outcome expectancy beliefs were moderately and positively correlated to their performance on reading and writing assessments. Although Shell et al. concentrated on the reading and writing products of self-efficacy, much of the research to date has centered on mathematics-specific self-efficacy.

Smith and Fouad (1999) examined academic subject domain specificity of educational SE and OE in high school students. They found that educational SE and educational OEs are subject-specific in the educational domain. They did not recommend the use of educational SE or educational OE generalized across subjects but rather recommended treating each subject separately. These recommendations were based on the results of a factor analysis that could not produce a good fit for one factor SE or OE across educational subject areas. This prompted Smith and Fouad to recommend further study beyond the plentiful research done in the mathematics/science domain (Brown et al., 1997; Gainor & Lent, 1998; Lent et al., 1991, 1993, 1996; Lopez et al., 1997) because the results indicated that it was

possible that the findings in the mathematics/science domain might not be generalizable to other subject areas.

Fouad, Smith, and Zao (2002) addressed this very issue by investigating SCCT principles, including the roles of SE and OE, across educational areas of art, social science, mathematics/science, and reading/writing. Fouad et al. (2002), using structural equation models, found support for the SCCT-based concept of the relation of SE and OE in the educational domain: that SE and OE are positively and moderately correlated and influential in the educational domain. They found that relations between SE and OE were similar across all four areas (art, social science, mathematics/science, and reading/writing).

Tilley (2002) studied educational OE as it related to academic SE. Using Springer et al.'s EOE (2001) along with the Academic Self-efficacy Scale (ASE; Larson, Toulouse, Ngumba, Fitzpatrick, & Heppner, 1994), he looked at OE and SE as it related to academic performance (GPA), ability (ACT score), and persistence (continued enrollment). He found that the EOE—similar to the ASE—was not a significant factor in a hierarchical regression predicting GPA and ACT score. However, the EOE stood out as a predictor of persistence where the ASE did not, lending credence to educational OE as an independent and important predictive construct in the domain of education.

Mathematics-related SE and OE

As mentioned at the start of the section on educational SE, much of the research is specifically focused on mathematics-related SE. In all, four studies were found of this nature. Review of the studies follows.

Using hierarchical regression, Lent, Lopez, and Bieschke (1993) examined the relation between mathematics SE and OE and their effects on aptitude (ACT) and

performance (grades). They reported a positive correlation between mathematics SE and performance on mathematics tasks and a positive correlation between mathematics SE and OE and the Mathematics section of the ACT. The regression revealed that, even though sex was always the first factor entered, mathematics SE accounted for a significant percentage of the variance in mathematics interest, intentions, and mathematics course performance. Mathematics OE also added significant variance above and beyond SE in predicting the mathematics interest and performance.

Brown, Eisenberg, and Sawislowski (1997) administered questionnaires to female college engineering and mathematics education majors to determine the women's educational outcome expectancies and their occupational values. They attempted to determine whether differences in values could sort women in a traditionally male-dominated field (engineering) from women in a more open field (mathematics education). Brown et al. found that values based on "traditional" vocations played a large role in differentiating between the women in the two majors, and self-efficacy for those "traditional" vocations played an even larger role than OE.

Lopez et al. (1997) used path analyses of mathematics/science interest to support a model that reports the positive correlation between educational SE and educational OE as posited in SCCT (Lent et al., 1994). Lopez et al. also found a positive correlation between academic SE and achievement as measured by course grades. Lent et al. (1991) used the relations among sources of efficacy information and the relations among self-efficacy, outcome expectancies, and interest in mathematics courses to explore the overall association between mathematics self-efficacy and a science-based career choice. They used measures of mathematics self-efficacy and outcome expectancies, subject-reported interest in

mathematics, career choice, and perceived source of mathematics self-efficacy to statistically determine the relations. Lent et al. found that outcome expectancies “complimented self-efficacy” in predicting career choice (but the effects of self-efficacy itself were mediated by interest) and also determined that efficacy information sources were particularly important in predicting mathematics self-efficacy (and in explaining sex differences on that construct).

Gainor and Lent (1998) examined the mathematics SE and OEs of African-American college students. They found that mathematics SE and OE correlated moderately in this population. The magnitude of the correlation was similar to those reported in other studies with mainly European-American participants (Lent et al., 1991, Lent et al., 1993). They also found mathematics SE to affect mathematics interests directly and through mathematics OE. In addition, Gainor and Lent (1998) found support for the positive correlation between mathematics SE and OE, and grade point average.

Finding an Educational SE Measure

The research at hand clearly requires the use of an SE measure to establish convergent validity estimates with the EOE-R. The following is a measure that fits the requirement of domain specificity. In fact, it is more specific than most SE measures in that it examines educational SE as it occurs within college students, specifically with relation to the duties and activities required and participated in by college students. These activities are not only education-related, but also college-related, which is a further indicator of an additional piece of information that fleshes out educational OEs relation to college students’ level of SE. A description of this instrument follows.

The College Self-Efficacy Inventory (CSEI). Solberg, O’Brien, Villareal, & Kennel (1993) created the CSEI, a 20-item measure of SE for college students. The instrument is

intended to assess the confidence the student has that she or he could successfully complete a college-related task. The CSEI tapped three additional components operationalized in three subscales: social efficacy (e.g., making friends), course efficacy (e.g., writing papers), and roommate efficacy (e.g., dividing apartment space). The CSEI appears to be a link between the efficacy literature of SCT and the literature of college student development by combining areas of SE with typical tasks related to college student life.

SE and OE in Education Domain: Summary

Research has supported the positive correlation between SE and GPA (e.g., Brown et al., 1989; Lent et al., 1984; Lopez et al., 1997) and SE and persistence (Brown et al., 1989; Lent et al., 1984, 1986, 1987). Two studies reported null findings (Hackett et al., 1992; Lent et al., 1993) and one other study showed a link of OE to achievement (Gainor & Lent, 1998). The persistence piece was of importance as well. Just as with GPA, there is a link provided between SE and persistence in the literature (Brown et al., 1989; Lent et al., 1984) but research has also linked educational OE and persistence (Tilley, 2002). Research has also found higher SE and OE to be positively related to better reading and writing (Shell et al., 1995). A number of studies have also found support for the role of SE in mathematics-related domains (e.g., Hackett & Betz, 1989; Lent et al., 1997). There has also been support for SE and OE in the mathematics domains (Brown et al., 1997; Gainor & Lent, 1998; Lent et al., 1991; Lent et al., 1993, 1996; Lopez et al., 1997) as well as across different educational domains (Fouad et al., 2002; Smith & Fouad, 1999).

Personality

Borgen (1999) conceptualized domains of individuality (including values) and venues of living, such as playing and working. The best fit in this model for OE is its link to values.

Values are reflective of OEs in that one has outcome expectations for activities that she or he values (Bandura, 1986; Lent et al., 1994). The goal of such a conceptualization is to illustrate both the intersection between individuality and living, called “fit” in Borgen’s diagram, and the intersection between the various domains of individuality and venues of living, both within the constructs and between them, as fodder for research questions. Borgen (1999) identifies four critical parts of individuality: interests, personality, self-efficacy, and values (OE). Each is related within the umbrella of individuality, and each relation is a possibility for research. The relation between personality and interest has been explored and documented by numerous authors in several meta analyses (e.g., Larson, Rottinghaus, & Borgen, 2002; Mount, Barrick, Scullen, & Rounds, in press; Staggs, 2003). The relation between interests and SE has been documented most recently in a meta-analysis on the subject (Rottinghaus, Larson, & Borgen, 2002).

As Borgen (1999) notes, some cells in the box have been studied extensively and some have not. He uses the example of cell 25 in the diagram—fit between interests and working—as an area with a voluminous research history. However, a research area that has not been explored much, and an area that will be one aim of this paper, is represented by cell 13: personality and OE. Cell 13 falls within the section depicting the intersection of facets within the domain of individuality. For the purposes of this paper, personality is represented by the measurement of traits. Some of these traits may be relevant in the domain of education, specifically educational OE. The researcher is interested in the relation between personality traits and educational OE. The researcher posits that personality traits that are positively correlated with positive academic outcomes should be positively and moderately correlated with educational OEs because educational OEs should also be positively

correlated with positive academic outcomes. Likewise, personality traits negatively related to positive academic outcomes should be moderately and negatively correlated with educational OEs. But regarding the overall framework, the research areas within Borgen's diagram merit further discussion.

The researcher conducted several searches on the PsychLit engine involving varied wordings of outcome expectancies and personality. Such precautions were taken in order to be as thorough as possible in the search for the extant literature covering the relation between the two constructs. The researcher found 303 articles in all. Most of these were unrelated and came up as a function of the extent of the search. In fact, a great proportion of the articles were included in the results of the search because of the wording "expectancy," which refers to the social psychological construct. Upon review, a mere four of the studies covered OE in a way appropriate to SCCT and covered personality as a separate psychological construct. Half of these (two) were articles related to the educational domain while the other half fit within other domains. Description and limited discussion of the research follows.

Personality and OE in Non-Educational Domains

Fischer, Smith, Anderson, and Flory (2003) looked at the influences of OE and personality on addictive behavior processes such as drinking alcohol and binge eating. They found a significant effect of positive OE for drinking on the extraversion factor of the Big Five such that higher OE was positively and moderately correlated with extraversion in the drinking situation. In addition, they found that positive OE for compulsive eating as a mediator of affect reduced the effect of the personality trait of "urgency" to resolve the eating disorder.

Although the research done by Fischer et al. (2003) was not in the educational or even the career domain, it does show a relation between OE and personality, which is a step in the right direction. McCormick (1997) studied personality, mathematics SE, and career OE in talented high school girls. She found that expressive personality (part of the “gender identity” factor) and mathematics SE predicted higher levels of career OE. She noted that she also studied same-age males and did not find the relation for personality and career OE, but the effects of mathematics SE remained.

Personality and OE in the Educational Domain

Henson (1976) studied the moderators of educational outcome expectancy when effort is the dependent variable. Educational outcome expectancy is not referred to as educational OE above, like it has been throughout the paper, because the author will only use the designation “OE” when referring to outcome expectancies within the theoretical framework of SCT; this paper does not use SCT as a framework for studying educational outcome expectancies. In fact, the paper predates the model by 10 years. However, it is clear from reading Henson’s paper that what he is describing as expectancy beliefs is quite close to Bandura’s concept of OE and therefore it should be considered in a review of the literature. Henson found that the effect of educational outcome expectancies on the level of effort shown by the participants was indeed moderated by personality variables of self-esteem, internal locus of control as measured by the Locus of Control Scale (Rotter, 1966), and dogmatism as measured by Troidahl and Powell’s (1965) dogmatism scale.

Vollmer (1984), in another model that predates SCT, examined what he called “personal expectations” prior to taking a mathematics exam. Again, the study is not framed in SCT let alone SCCT but it does capture the spirit of the models because the variable

described in the paper closely resembles SCT's concept of OE, and in the educational domain, no less. He found that males were significantly more likely to have what Vollmer called a "calm" personality, as defined by the Personal Attributes Questionnaire (Spence & Helmreich, 1979) and had higher outcome expectancies for the test than females. Even when he accounted for the effects of personality, he found that males had higher outcome expectancies. Interestingly enough, no significant sex differences were found in the actual test grades.

As discussed earlier, connections have been drawn in the research between SE and interest, SE and personality, and SE and OE. Yet no link nearly as solid as those listed exists between OE and personality. Looking back to the studies cited above, one could see the great paucity of literature on this issue. From this paucity of research comes one goal of this dissertation: the researcher will attempt to establish the relation between educational OE and personality.

There are many theories about personality in the literature, and these theories have spawned multiple measures. Two of note, as they relate to SE and OE, and the measures with which they are associated are discussed below. Beyond this is the matter of the relation between personality and OE. As noted earlier in these pages, personality has not been investigated with OE to the extent it has been investigated with SE. The researcher conducted a preliminary search using the PsychLit search engine. The search yielded far more studies under the SE and personality categories than it did under the OE and personality categories.

Measures of Personality in Educational Domain

The following section discusses the main existing measures of personality in the educational domain. The measures are categorized according to the theory each represents. In the case of the included measures, they fall under two main theories: The Big Five and The Big Three. First, the researcher will discuss the theory behind the measure. Following this, he will discuss each measure itself.

The Big Five: NEO PI-R

The first theory of personality to be discussed is The Big Five as described by Costa and McCrae (1992). The Big Five, or Basic Five-Factor Model of Personality as it has been called, consists of five factors that are intended to represent the five basic human personality traits. The first of these is Neuroticism (N), a “general tendency to experience negative affects such as fear, sadness, embarrassment, anger, guilt, and disgust” (Costa & McCrae, 1992; p. 14). The second is Extraversion (E). People that have a high level of E (extraverts) prefer social contact and are upbeat, energetic, optimistic, assertive, active, and talkative. The third factor is Openness to Experience (O): “active imagination, aesthetic sensitivity, attentiveness to inner feelings, and preference for variety, intellectual curiosity, and independence of judgment.” (p. 14). The fourth factor, Agreeableness (A), is an altruistic tendency, an eagerness to be helpful to others, and a belief that others will help them in return. Finally, Conscientiousness (C) describes individuals that are able to plan, organize, and carry out tasks with will and a purpose.

The Revised NEO Personality Inventory (NEO PI-R), as described by Costa and McCrae (1992), measures each of the Big Five personality traits. Each of the traits is divided

into primary scales. The primary scales exist to cover the relevant aspects of each of the traits as described above. For example, the N scale has primary scales of Anxiety (N1) and Vulnerability (N6) while the A scale has primary scales of Trust (A1) and Altruism (A3). In this manner, the contributors to each of the personality traits are teased apart and shown separately, which aids in the interpretation of a NEO PI-R profile.

The Big Three: MPQ

The second theory of personality to be discussed is The Big Three, as described by Tellegen (Tellegen, 1982; Tellegen & Waller, in press). The Big Three is a three-factor model of personality with factors of Positive Emotionality, Negative Emotionality, and Constraint. Those with a great deal of Positive Emotionality (PE) convey self-efficacy, active involvement in social and work environments, and readiness to experience the positive emotions that come with these environments. In contrast, those low in PE convey low self-efficacy, less active involvement in social and work environments, and a lower likelihood of experiencing positive emotions in conjunction with these environments.

Negative Emotionality (NE) is associated with stress, a negative emotional response bias, and enmeshment in adversarial relations. Those low in NE convey less likelihood of negative emotional response and a less adversarial interpersonal outlook. Constraint (CT) is associated with caution, planfulness, less risk-taking behavior, conventionality, and traditional values. Those low in CT convey impulsiveness, danger seeking, and rejection of traditional values.

The Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press) was designed to assess the personality traits of the Big Three model. The

MPQ is divided into eleven primary scales, each of which is associated with one of the Big Three. Tellegen and Waller's (in press) factor analysis revealed PE to be associated with the scales of Well-Being, Social Potency, and Achievement. The analysis found NE to be positively correlated with the scales of Stress Reaction, Alienation, Aggression, and Absorption and negatively associated with the scale of Social Closeness. The CT factor is associated with Control, Harm Avoidance, and Traditionalism. A description of each of the eleven primary scales follows.

Well-Being. Those that scored high on the Well-Being scale described themselves as happy and cheerful. They feel good about themselves and are optimistic about the future. They also report living an exciting and active life. Conversely, low scorers on this scale reported few joyous or exciting experiences and reported being happy only on rare occasions (Tellegen, 1982).

Social Potency. Those that scored high on the Social Potency scale described themselves as forceful and decisive. They enjoy leadership roles and the ability to influence others. In addition, they like to be noticed at social events. Conversely, low scorers on this scale do not like to take charge or make decisions; they do not aspire to leadership roles nor do they wish to be the center of attention at social events (Tellegen, 1982).

Achievement. Those that scored high on the Achievement scale described themselves as hard workers. They like demanding projects that require long hours. They show many characteristics that would commonly be described as perfectionistic, such as putting work and accomplishment first and persisting in the face of adversity. Conversely, low scorers on

this scale avoid working harder than is absolutely necessary and would not consider themselves to be perfectionists (Tellegen, 1982).

Social Closeness. Those that scored high on the Social Closeness scale like people and value having interpersonal connections. They are affectionate and do not mind turning to others for comfort. As one can see, this does not seem to be a particularly negative type of affective response. Thus, while the scale is tied to the NE factor, the correlation is a negative one. Low scorers on this scale prefer to be alone and do not mind being distant from others or working out problems on their own (Tellegen, 1982).

Stress Reaction. Those that scored high on the Stress Reaction scale described themselves as nervous, worrisome, and vulnerable. They are also easily upset and can feel miserable for no particular reason. Conversely, low scorers on this scale are able to deal with fears and worries quite easily; they are not particularly guilt-ridden (Tellegen, 1982).

Alienation. Those that scored high on the Alienation scale feel as if they are victims of bad luck. They feel mistreated and targeted by others for false rumors or betrayal. Conversely, low scorers do not feel victimized and feel as if they are treated fairly (Tellegen, 1982).

Aggression. Those that scored high on the Aggression scale described themselves as willing to hurt others for their own advantage. They will actually resort to physical aggression. In addition, they are vindictive and take pleasure in the discomfort of others. Conversely, low scorers on this scale will not take advantage of others and are not violent. Unlike high scorers, they do not like to witness physical aggression and do not enjoy the misfortunes of others (Tellegen, 1982).

Absorption. Those that scored high on the Absorption scale described themselves as emotionally responsive to engaging stimuli. They also report episodes of mystical awareness and cross-modal experiences, such as thinking in images. Conversely, low scorers on this scale hold a far more realistic and pragmatic frame of reference (Tellegen, 1982).

Control. Those that scored high on the Control scale described themselves as reflective, cautious, and careful, almost to a plodding pace. They also place value in rationality and sensibility. Conversely, low scorers on this scale are impulsive and spontaneous almost to a point of recklessness and carelessness at times (Tellegen, 1982).

Harm Avoidance. Those that scored high on the Harm Avoidance scale prefer less adventurous activities, even if these activities are less than interesting as well. They are even willing to participate in tedious behaviors so as to avoid danger. Conversely, low scorers on this scale are thrill seekers that may expose themselves to injury (Tellegen, 1982).

Traditionalism. Those that scored high on the Traditionalism scale endorse high moral standards, especially those associated with religion or institutions. They consider themselves strict, not only in personal moral code, but also in child rearing, as they look down upon permissiveness. In addition, they condemn the disregard of others for selfish purposes. Conversely, low scorers on this scale are not particularly concerned with the importance of morals, consider selfishness as an option on occasion, and most likely find religion to be outdated and prudish (Tellegen, 1982).

The NEO PI-R and the MPQ: Comparisons and Conclusions

The NEO PI-R is built on the Big Five personality types of Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The Big Five

factors have been studied in many situations and have been shown to be very valuable. However, it appears that—because the five factors are not particularly bent toward college students and the divisions of the factors are of such great number—a less faceted or at least a more suited measure is required.

The eleven scales of the MPQ are specific enough to stand alone as personality variables but related enough in some instances to stand as factors of personality, as discussed above. The MPQ also seems particularly fit to measure variables that are influential in college student development such as Achievement and Stress Reaction. This bodes well for the instrument as it applies to the current undertaking of comparing personality variables to educational outcome expectancy. Therefore the researcher will use the MPQ as the measure for comparison of personality with educational OE as measured by the EOE-R.

The Use of Specific Primary Scales of the MPQ

Several of the primary scales of the MPQ were particularly interesting to the researcher in terms of their value in comparison with the EOE. The criteria for inclusion in the current research as a comparison variable was the theoretical relation between the particular personality trait measured by the primary scale and educational success. Below are the primary scales used in the current research and explanations for why the researcher included each.

Well Being and Achievement. The primary scales of “Well Being” and “Achievement,” both of which are part of the Big Three trait of Positive Emotionality (PE), are associated with self-efficacy and preparedness to experience positive emotions associated with a person’s work and social environments (Tellegen, 1982). These characteristics are theoretically related to the underlying structure of educational OE because academic self-

efficacy has already been linked to educational OE (e.g. Brown et al., 1989; Lent et al., 1997; Lent et al., 2000; Tilley, 2002; Wheeler, 1983). The SE-OE link, along with the theoretical link between positive emotion and higher levels of OE, provides rationale for a possible relation between the “Well Being” and “Achievement” primary scales.

While these two primary scales are included, “Social Potency,” the third scale loading on PE, is not. Even though the characteristics associated with “Social Potency” load highly on PE, high scores on the scale indicate a “forceful and decisive” personality (Tellegen, 1982) that is not necessarily or theoretically related to higher OE. In fact, high scores on “Social Potency” may be excluding students who do not aspire to leadership but are still highly capable of performing well in college.

Stress Reaction. The primary scale “Stress Reaction,” which is part of the Big Three trait of Negative Emotionality (NE), is associated with nervousness, vulnerability, and a propensity to become “easily upset and irritable” (Tellegen, 1982). Such characteristics are part of a pattern of negative emotional response to everyday problems. The features of NE as measured on the MPQ are in opposition to positive academic outcomes, which have been linked to higher EOE scores (Tilley, 2002). “Stress Reaction” in particular stood out as a scale loading on NE that would be useful as an example in the college realm because college fundamentally challenges students’ ability to respond well to everyday problems and setbacks. A student’s ability to handle the daily issues with which she or he is presented—an ability inversely related to success in college—led the researcher to conclude that “Stress Reaction” would be negatively and moderately correlated with scores on the EOE-R.

While the “Stress Reaction” scale of NE was included, the other scales loading primarily on NE were not. “Social Closeness,” which loads strongest on NE but in a negative

direction, is tied to preferences for level of social contact. The researcher did not think that a student's social closeness (Tellegen, 1982) ruled her or him out from being successful in college. "Alienation," which also loads primarily on NE, was not included in the current research because it is mainly associated with one's feelings about her or his luck or about being a "target" (Tellegen, 1982). "Aggression," another scale loading primarily on NE, captures a person's willingness to "hurt others" or bring others discomfort in order to gain an advantage (Tellegen, 1982). The researcher did not find any of the preceding characteristics associated with the preceding two scales to be strongly linked to academic outcomes. Finally, "Absorption," which has shown factor loadings on PE and NE (Tellegen & Waller, in press), is a scale meant to capture the interest a person has in "entrancing stimuli" and the emotional responsiveness a person experiences (Tellegen, 1982). This did not seem to be a scale measuring characteristics that were related to academic outcomes.

Control. The primary scale "Control," which is part of the Big Three trait of Constraint (CT), is associated with caution, reflection, and a desire to plan activities (Tellegen, 1982). Such characteristics are often encouraged to entering college freshmen in order to communicate the value of planning and reflection in successful endeavors. Logically, personalities more likely to have and use the "Control"-related characteristics are those more likely to experience success in college. The planning and reflection that are a part of "Control" are also manifested, among other ways, by staying with said plan or persisting. The EOE has already been shown to predict persistence in obtaining a college degree (Tilley, 2002). Therefore the researcher predicted that higher scores on the "Control" scale would be significantly, positively and moderately correlated with scores on the EOE.

While the “Control” scale of CT was included, the other scales loading primarily on CT were not. “Harmavoidance,” which is tied to preferences for safe activities and an avoidance of “risky” activities, does not appear to be related to success in college. “Traditionalism,” the third primary scale loading mainly on CT, describes individuals that endorse “high moral standards and religious values” while disagreeing with permissiveness (Tellegen, 1982). A person’s moral standards or level of religiosity did not appear to the researcher to be related to what such a person would expect out of her or his education.

Satisfaction

As is the case with personality, as discussed above, the researcher was interested in exploring educational OE’s relation to satisfaction. While little is known about educational OE’s relation with personality, Bandura (1986) provided rationale for why educational OE might be studied in conjunction with the variable of satisfaction. In his 1986 article, he broke OEs into several classes. Along with the classes of social and physical OEs was the anticipation of self-evaluative outcomes. Bandura (1986) stated that the anticipation of such self-evaluative outcomes may importantly affect career behavior. In other words, outcome expectancies are related to satisfaction. Therefore the researcher also tested EOE-R scores in the context of the participants’ scores on a measure of satisfaction. A brief overview of this measure follows.

Your First College Year. The Your First College Year (Astin, 1993) measure is produced yearly by The University of California at Los Angeles (UCLA). The measure consists of 50 items. This author used the items on the scale specifically measuring satisfaction specific to the college experience ($n=18$). The items include such questions as “Please rate your level of satisfaction with your overall college experience” (p. 2) followed

by a 5-point Likert scale with options ranging from “very satisfied” (1) to “very dissatisfied” (5), including a sixth option of “No experience/not available.”

Self-Efficacy, Personality, and Satisfaction with OE: Conclusions

Research has shown SE and OEs to have numerous impacts. For example, SE and OEs have been shown to play a role in the choice of career (e.g., Lent, Brown, & Hackett, 2000; Wheeler, 1983). Conceptual articles have attempted to define the role of SE and OE in career development (e.g., Chartrand & Rose, 1996; Hackett & Byars, 1996; Morrow, Gore, & Campbell, 1996). These articles advocate the moderate positive relation between SE and OE and career development. In addition, SE and OEs have also been shown to play a role in educational achievement (e.g., Brown et al., 1989; Lent et al., 1997). In fact, numerous studies on the specific category of academic SE—personal beliefs about one’s ability to perform in an academic setting—(e.g., Hackett & Betz, 1989; Lent, et al., 1997; Shell, et al., 1995) and academic (or educational) OE—personal beliefs about the outcomes of his or her education—(e.g., Brown, et al., 1997; Lent et al., 1991) exist in the literature as well. This provides support to the SCCT supposition that SE and OE are related.

There is a definite lack of current research on the overlap of personality and OE. As noted above, there are numerous ways to investigate the concept of individuality represented in the diagram, yet certain relations (e.g., interests and SE; personality and interests) have consistently been studied at a greater rate than others (e.g., personality and values or OE). In fact, the lack of OE-personality overlap research is striking, considering the relative wealth of research on the links among the other facets, so much that it begs the question as to why the two have not been studied together in a systematic and specific fashion with the same

fervor as the others. In fact, the concept of personality per se is not included in SCCT. While the researcher cannot answer this question, he attempted to begin to bridge that gap.

Many of the preceding statements about personality and OE apply to satisfaction and OE. A notable exception is that in Bandura's (1986) formulation of outcome expectancies, rather than exclude personality as noted above, included the role of satisfaction in career activity. The researcher is interested in the ability of the EOE-R to act as a reliable and valid measure of OE. The study of satisfaction as a criterion variable and a comparison to the EOE-R should shed some light on how related the two constructs (educational OE and satisfaction in the educational realm) are and how well the EOE-R reflects that.

Literature Review: Conclusion

Given the limitations of using a solitary measure, using only the SCCT-based measure of educational OE (EOE; Springer, et al., 2001) has some limitations. Before the lack of possible alternatives is discussed, it must be noted that while the EOE was the best available instrument for investigation of educational OE, it was not flawless. The researcher therefore took it as a goal to establish reliability and validity estimates for the EOE-R. This was accomplished using factor analysis to support the claim that the EOE-R is a solid, one-factor instrument. Items were added and internal consistency was measured and reported using the α statistic. Other areas, as noted in the following paragraphs, were studied to establish concurrent and convergent validity for the EOE-R.

Again, the number of educational OE measures is quite small. The additional measures used in the current research had to be the best possible approximations to educational OE, as discussed above. Therefore, first, based on the research linking SE and OE, the researcher is proposing that there is a positive correlation between educational OE

and college-related SE. The choice of a college-related SE measure is important because the very nature of SE and OE is tied to the concept of specific outcomes. College-related SE is the confidence a student has that she or he could successfully complete a college-related task (Solberg, et al., 1993). The researcher hypothesizes that this very specific type of SE is positively and moderately related to educational OE. Thus the CSEI was the SE measure of choice for the current research.

The second part of drawing links to educational OE is the satisfaction as an outcome. As one looks at educational OE it is necessary to note the other ways of investigating college student outcome expectancies. There must be a building point for educational OE as it relates to the specific outcomes of having a college degree. The point becomes clearer upon inspection of Bandura's (1986) conceptualization of OEs as having a satisfaction component: if educational OE is fundamentally about college student's expectations for their bachelor's degree and OEs are associated with one's expectancy for satisfaction, then OE should be related to college satisfaction as discussed in the domain of college student development.

As stated before, Bandura's (1986) conceptualization of OE included a satisfaction expectancy component. No multiple measures approach to studying OE would be complete without a measure of satisfaction. In the interest of being as specific as possible, given the specific nature of OEs, the researcher used a measure of college student satisfaction. The measure of the satisfaction variable will serve as an outcome measure that should supplement the research findings regarding educational OE.

The dissertation also addressed the lack of OE literature—specifically educational OE—in conjunction with personality. The researcher questioned whether this lack of literature is warranted by investigating the relation between educational OE and personality.

The correlation was investigated using the Educational Outcome Expectancy Scale (EOE; Springer, Larson, Tilley, & Gasser, 2001) and the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press). The MPQ is divided into three higher-order scales with multiple smaller scales that measure personality traits. The researcher intended to find support for the position that educational OE is meaningfully related to certain personality traits. For example, one would expect that those with the personality trait, Achievement, described as those who like demanding projects and persist in the face of adversity, would have high scores on an educational OE measure like the EOE-R; the EOE has been shown to be related to persistence in pursuing a degree (Tilley, 2002). Beyond this, personality traits that are generally seen as detrimental to college success, such as poor reactions to stressful situations, should be negatively correlated with high EOE-R scores.

Therefore, based on the preceding discussion, the dissertation addressed two main lines of inquiry. First, the researcher continued the development of the EOE-R measure. Such an undertaking involved factor analysis to determine whether the revised measure retains its original one factor structure. The process also included a measurement of internal consistency, reported as α .

Second, the researcher provided initial estimates of reliability and validity for the EOE-R. Such a task was accomplished by investigating the relation between educational OE and college SE, educational OE and personality, and educational OE and satisfaction. Prior to collecting any data, the researcher was already aware of how the relation between SE and OE should look. However, the findings from these undertakings move toward filling a gap in literature and in understanding of OE's role in the pursuit of a college degree. Not only

would such findings help establish the relation between educational OE and college satisfaction, but they should establish connections between educational OE and personality, which has not been done before.

Hypotheses

The researcher's goal for the current project was revision of the EOE-R and investigation of the relation between educational OE and personality. To that end, the dissertation embodies two studies. The first study covers the aforementioned two-pronged revision process of item addition, factor analysis, and reliability estimates. The second study provides the validity estimates, namely the examination of the relation between educational OE and personality and between educational OE and college SE. There was also a need to provide criterion validity: namely, does the EOE-R predict college satisfaction? The first study set out to establish the EOE-R as a solid measure of overall educational OE—something that is lacking at the current time—and the second provided initial validity estimates.

Based on the preceding information, the researcher had the following hypotheses:

Study One

Study One is the study dedicated to revising the EOE-R, taking into account construct validity and reliability.

Hypotheses:

1. The revised measure of educational OE will consist of one single factor and the items will load on that factor.
2. The new educational OE measure will demonstrate internal consistency.

Study Two

Study Two is the study dedicated to providing initial convergent and criterion validity estimates for the EOE-R. Specifically, the EOE-R was correlated with personality indices and college satisfaction.

Hypotheses:

1. Educational OE will be significantly positively and moderately correlated with college SE.
2. Educational OE will be significantly positively and moderately correlated with participants' sense of well-being and motivation for achievement.
3. Educational OE will be significantly negatively and moderately correlated with participants' reaction to stress.
4. Educational OE will be significantly positively and moderately correlated with participants' need for control.
5. Educational OE will be significantly positively and moderately correlated with participants' level of satisfaction with their college experience.

Rationale for Hypotheses: Study One

Rationale for each of the preceding hypotheses is listed below. Based on the literature and information presented by the researcher the above hypotheses would be represented thusly:

1. **The EOE-R will consist of one single factor and the items will load on that factor.** The EOE as it was originally investigated in the Tilley (2002) study had six items. The researcher is adding 34 more items in order to present multiple representations of the interests represented by each item in the old EOE. Such a process is advisable as it increases the likelihood of accurately capturing the educational OE construct with the EOE-R. One advantage—an advantage built into the criteria the dissertation put forth for a solid measure of educational OE—of the EOE-R was its single-factor structure. Study One involves a factor analysis

meant to prove that the revised EOE-R items continue to represent a single factor, educational OE.

2. **The revised EOE will be a reliable measure, as demonstrated by the internal consistency statistic α .** Another requirement of a solid measure is that it be reliable. One measure of reliability is its internal consistency, or α value. Study One is based on proving the EOE-R to be a solid measure. Therefore, Study One will establish the reliability of the EOE-R.

Rationale for Hypotheses: Study Two

Rationale for each of the preceding hypotheses is listed below. Based on the literature and information presented by the researcher the above hypotheses would be represented thusly:

1. **Educational OE, as measured by the EOE-R, will be positively and moderately correlated with college SE, as measured by the CSEI.** Because of the relation between SE and OE, it should stand to reason that the scores on both be positively and moderately correlated. This information should lend support to the relation between educational OE and SE (Brown et al., 1997; Fouad et al., 2002; Gainor & Lent, 1998; Lent et al., 1991; Lent et al., 1993; Lent et al., 1996; Lopez et al., 1997; Smith & Fouad, 1999).
2. **Educational OE will be positively and moderately correlated with Well-Being and Achievement.** The Positive Emotionality personality trait of Tellegen's Big Three encompasses primary scales entitled "Well-Being" and "Achievement" which are associated with personal efficacy and preparedness to experience positive emotions associated with a person's work and social environments.

Academic SE has already been shown to be related to educational OE (e.g., Brown et al., 1989; Lent et al., 1997, 2000; Tilley, 2002; Wheeler, 1983).

Essentially, the author is proposing a link between self-efficacy and personal efficacy to the effect that educational OE will share a similar relation with personal efficacy (measured through primary scales of the Positive Emotionality component of the MPQ) as it does with academic SE.

3. Educational OE will be negatively and moderately correlated with Stress

Reaction. The Negative Emotionality trait of Tellegen's Big Three encompasses a primary scale entitled "Stress Reaction," which is associated with patterns of negative emotional response to everyday problems. The EOE has been shown to predict positive academic outcomes such as academic persistence (Tilley, 2002). The features of negative emotionality as measured on the MPQ are in opposition to the positive academic outcomes and therefore should be negatively correlated with the EOE-R. The author proposes that the EOE-R score will correlate negatively and moderately with the Stress Reaction MPQ score.

4. Educational OE will be positively and moderately correlated with Control.

The Constraint trait of Tellegen's Big Three encompasses a primary scale entitled "Control," which is associated with patterns of excessive caution and planfulness as well as conventionality and adherence to traditional values. Planfulness, traditional attitudes, and conventionality should, by definition, be correlated with putting together an educational plan and persisting in it, which could be manifested in staying in college and dedicating one's self to one's academic work.

To the extent that these are correlated with educational OE, the EOE-R should be positively correlated with Constraint MPQ score.

5. **The EOE-R will be positively and moderately correlated with participants' level of satisfaction with their college experience, as measured by the Your First College Year Questionnaire.** In SCCT, the hypothesis 11A states that educational OE should be positively related to reinforcing consequences that one has directly experienced. One of those reinforcing consequences would be satisfaction with the college experience. No one has tested this hypothesis in educational OE domain.

CHAPTER 3: METHOD

Study 1

Participants

Data were collected from students ($N=1045$) at a large Upper-Midwestern university. The sample included 582 (56%) females and 463 (44%) males. The breakdown by class standing is as follows: freshman ($n=663$), 63%; sophomores ($n=246$), 23%; juniors ($n=97$), 8.5%; seniors ($n=49$), 5%; other/grad students ($n=4$), .5%. The breakdown by ethnic background is as follows: Caucasian/White ($n=927$), 88%; African-American ($n=30$), 3%; Asian-American/Pacific Islander ($n=38$), 4%; Latino/a-American ($n=20$), 2%; International Student ($n=13$), 1%; Multi-Racial ($n=11$), 1%; Native American ($n=3$), .5%; Other ($n=4$), .5%.

The Educational Outcome Expectancy Scale-Revised (EOE-R)

Springer et al. (2001), based on Larson's original work, presented the original EOE to measure educational OEs. The original EOE is a six item Likert-type scale that requires the participant to gauge from 1 to 6 to what extent he or she expects an outcome (item) when he or she has completed a bachelor's degree (1=not at all expecting the outcome, 6=very much expecting the outcome). Item examples include [To what extent do you expect to...] "be more competitive in the job market" and "reduce the chance of being fired."

Springer et al. (2001) provided the results of the factor analysis on the EOE. They decided on using one factor (educational OE) that accounted for 69% of the variance. The internal consistency was reported as $\alpha=.77$ for the females and $\alpha=.83$ for the males in the sample. The confirmatory factor analysis yielded loadings ranging from .45 to .89 for the

females in the sample and .53 to .86 for the males in the sample. The internal consistencies in the second sample were $\alpha=.83$ for the females and $\alpha=.86$ for the males. Springer et al. (2001) conducted a Pearson product-moment correlation to find six-week test-retest reliability for the EOE ($r = .48$). High scores on the EOE have been shown to be significantly related in a positive direction with academic outcomes such as higher GPA and academic persistence (Tilley, 2002).

For the purposes of linking the EOE directly to the undergraduate college setting, the EOE was expanded to include a) additional items addressing what students expect from obtaining a college degree and b) items derived from the conceptual relation between OE and satisfaction (Bandura, 1986). Further discussion of the process of generating new items is provided in the Generation of Items section below. The scale is scored and structured just as the original EOE was.

Operationalized Hypotheses

Based on the information and literature presented, the researcher investigated each hypothesis in the method described below:

1. The EOE-R will consist of one single factor and the items will load on that factor.
2. The EOE-R measure will demonstrate internal consistency with a strong α level.

Generation of Items

The researcher decided that the six-item structure of the original EOE was insufficient to measure the construct of EOE as it was discussed in the literature review. Namely, the EOE-R needed to represent an overall view of college rather than the six RIASEC domains of college (as hypothesized in Tilley, 2002); the perspective of educational OE as not being subject-specific but also being a construct that represented expectancies for outcomes related

to the overall earning of a college degree and a construct related to satisfaction was discussed at length in the literature review. Specifically, Bandura (1986) discussed OEs as incorporating physical outcomes (e.g., earning more money), social outcomes (e.g., pride), and self-evaluative outcomes (e.g., making parents proud).

Therefore the researcher and two senior colleagues established in the vocational psychology research community met to discuss the content of the additional items. The group decided to produce three item types for addition to the original EOE to create the EOE-R: items capturing the expectations one would have as a result of getting a college education such as physical outcomes and social outcomes, and items capturing expectations for satisfaction as a result of achieving a college degree.

One example of an item representing physical outcomes is “be able to make more money.” An example of an item representing social outcomes is “make my family proud.” The preceding items are representative of a group of items added to the EOE-R in order to capture the need for physical outcomes and social outcomes discussed above. Beyond these, other items were included as representative of the general expectations one might have for obtaining a 4-year undergraduate college degree.

In order to capture the expectations one would have as a result of getting a college education, the researcher added twenty-five total items. Two of the items were added to address the expectations for satisfaction component discussed by Bandura (1986) and Lent et al. (1994). The remaining 23 items were added in order to capture possible content areas of what students expect from obtaining a college degree, including the aforementioned items addressing physical and social outcomes. A complete listing of the items of the EOE-R is included in the Appendix section.

Procedures

Data on the EOE-R were collected as part of two 90 minute-long mass-testing sessions that included multiple other measures from other researchers. Participants volunteered to take part in the study for extra credit in introductory psychology courses. There was no penalty for participants that did not finish the session. There was also no penalty for those choosing not to take part in the session.

Study 2

Participants

Data were collected from introductory psychology students ($N=173$) at a large Upper-Midwest university who had volunteered to participate. The sample included 94 (54%) females and 79 (46%) males. The breakdown by class standing is as follows: freshman ($n=103$), 60%; sophomores ($n=40$), 23%; juniors ($n=14$), 8%; seniors ($n=16$), 9%. The breakdown by ethnic background is as follows: Caucasian/White ($n=157$), 91%; African-American ($n=6$), 4%; Asian-American/Pacific Islander ($n=2$), 1%; Latino/a-American ($n=4$), 2%; International Student ($n=2$), 1%; Other ($n=1$), 1%.

Instruments

Educational Outcome Expectancy Scale-Revised (EOE-R)

The same items used in Study One as the EOE-R were used in Study Two as the measure of educational OE.

Multidimensional Personality Questionnaire (MPQ)

The MPQ (Tellegen, 1982; Tellegen & Waller, in press) is a self-report questionnaire that measures normal-range personality. There are three higher-order factors (personality

traits) of the MPQ: Positive Emotionality (PE), Negative Emotionality (NE), and Constraint (CT). High scores on PE convey self-efficacy, active involvement in social and work environments, and readiness to experience the positive emotions that come with these environments. In contrast, low scorers on PE convey low self-efficacy, less active involvement in social and work environments, and a lower likelihood of experiencing positive emotions in conjunction with these environments.

High scorers on the second factor, NE, convey stress, a negative emotional response bias, and enmeshment in adversarial relations. Low scorers on NE convey less likelihood of negative emotional response and a less adversarial interpersonal outlook. High scorers on the third factor, CT, convey caution, planfulness, less risk-taking behavior, conventionality, and traditional values. Low scorers on CT convey impulsiveness, danger-seeking, and rejection of traditional values.

DiLalla, Gottesman, Carey, & Vogler (1993) provided construct validity estimates for the internal structure of the MPQ. They conducted a joint factor analysis of the primary and higher order scales of the MPQ and the Minnesota Multidimensional Personality Questionnaire-2 (MMPI; 1989). The analysis found meaningful associations between the MPQ primary scales and MMPI scales hypothesized to be theoretically related. DiLalla et al. reported a four-factor solution that accounted for 64% of the variance in the MMPI and MPQ primary scale scores.

The following is a description of each of the primary scales of the MPQ.

Well Being. Those that scored high on the Well-Being scale described themselves as happy and cheerful. They feel good about themselves and are optimistic about the future. They also report living an exciting and active life. Conversely, low scorers on this scale

reported few joyous or exciting experiences and reported being happy only on rare occasions (Tellegen, 1982). Internal consistency for the Well-Being scale has been reported as $\alpha=.89$ (Staggs, 2002).

Social Potency. Those that scored high on the Social Potency scale described themselves as forceful and decisive. They enjoy leadership roles and the ability to influence others. In addition, they like to be noticed at social events. Conversely, low scorers on this scale do not like to take charge or make decisions; they do not aspire to leadership roles nor do they wish to be the center of attention at social events (Tellegen, 1982). Internal consistency for the Social Potency scale has been reported as $\alpha=.89$ (Staggs, 2002).

Achievement. Those that scored high on the Achievement scale described themselves as hard workers. They like demanding projects that require long hours. They show many characteristics that would commonly be described as perfectionistic, such as putting work and accomplishment first and persisting in the face of adversity. Conversely, low scorers on this scale avoid working harder than is absolutely necessary and would not consider themselves to be perfectionists (Tellegen, 1982). Internal consistency for the Achievement scale has been reported as $\alpha=.84$ (Staggs, 2002).

Social Closeness. Those that scored high on the Social Closeness scale like people and value having interpersonal connections. They are affectionate and do not mind turning to others for comfort. As one can see, this does not seem to be a particularly negative type of affective response. Thus, while the scale is tied to the NE factor, the correlation is a negative one. Low scorers on this scale prefer to be alone and do not mind being distant from others or

working out problems on their own (Tellegen, 1982). Internal consistency for the Social Closeness scale has been reported as $\alpha=.85$ (Staggs, 2002).

Stress Reaction. Those that scored high on the Stress Reaction scale described themselves as nervous, worrisome, and vulnerable. They are also easily upset and can feel miserable for no particular reason. Conversely, low scorers on this scale are able to deal with fears and worries quite easily; they are not particularly guilt-ridden (Tellegen, 1982). Internal consistency for the Stress Reaction scale has been reported as $\alpha=.89$ (Staggs, 2002).

Alienation. Those that scored high on the Alienation scale feel as if they are victims of bad luck. They feel mistreated and targeted by others for false rumors or betrayal. Conversely, low scorers do not feel victimized and feel as if they are treated fairly (Tellegen, 1982). Internal consistency for the Alienation scale has been reported as $\alpha=.81$ (Staggs, 2002).

Aggression. Those that scored high on the Aggression scale described themselves as willing to hurt others for their own advantage. They will actually resort to physical aggression. In addition, they are vindictive and take pleasure in the discomfort of others. Conversely, low scorers on this scale will not take advantage of others and are not violent. Unlike high scorers, they do not like to witness physical aggression and do not enjoy the misfortunes of others (Tellegen, 1982). Internal consistency for the Aggression scale has been reported as $\alpha=.76$ (Staggs, 2002).

Absorption. Those that scored high on the Absorption scale described themselves as emotionally responsive to engaging stimuli. They also report episodes of mystical awareness and cross-modal experiences, such as thinking in images. Conversely, low scorers on this

scale hold a far more realistic and pragmatic frame of reference (Tellegen, 1982). Internal consistency for the Absorption scale has been reported as $\alpha=.88$ (Staggs, 2002).

Control. Those that scored high on the Control scale described themselves as reflective, cautious, and careful, almost to a plodding pace. They also place value in rationality and sensibility. Conversely, low scorers on this scale are impulsive and spontaneous almost to a point of recklessness and carelessness at times (Tellegen, 1982). Internal consistency for the Control scale has been reported as $\alpha=.86$ (Staggs, 2002).

Harm Avoidance. Those that scored high on the Harm Avoidance scale prefer less adventurous activities, even if these activities are less than interesting as well. They are even willing to participate in tedious behaviors so as to avoid danger. Conversely, low scorers on this scale are thrill seekers that may expose themselves to injury (Tellegen, 1982). Internal consistency for the Harm Avoidance scale has been reported as $\alpha=.84$ (Staggs, 2002).

Traditionalism. Those that scored high on the Traditionalism scale endorse high moral standards, especially those associated with religion or institutions. They consider themselves strict, not only in personal moral code, but also in child rearing, as they look down upon permissiveness. In addition, they condemn the disregard of others for selfish purposes. Conversely, low scorers on this scale are not particularly concerned with the importance of morals, consider selfishness as an option on occasion, and most likely find religion to be outdated and prudish (Tellegen, 1982). Internal consistency for the Traditionalism scale has been reported as $\alpha=.85$ (Staggs, 2002).

The College Self-Efficacy Inventory (CSEI)

The CSEI (Solberg, O'Brien, Villareal, & Kennel, 1993) is a measure of college-related SE. The construct was defined as a college "student's degree of confidence that she or he could successfully complete a given college-related task" (Solberg, 80). The CSEI is a 20-item instrument with 3 subscales: course efficacy (SE related to completing course requirements such as assignments and tests; 7 items), social efficacy (SE related to working with others in the college environment such as professors and friends; 6 items), and efficacy for coping with others (SE related to living and relating with roommates such as dividing apartment space; 7 items).

The internal consistency for the total scale was $\alpha=.91$ (Solberg, Gusavac, Hamann, Felch, Johnson, Lamborn, & Torres, 1998). Subscale coefficients ranged from .89 to .62. In terms of validity, Solberg (1998) computed correlations between the CSEI and the College Stress Inventory (CSI; Solberg et al., 1998), a 20-item instrument measuring stress of college student participants as they complete college-related tasks. The results showed negative correlations between all three factors of the CSI and all three factors of the CSEI. The highest correlations were a) $r=-.63$ between the Academic Stress factor of the CSI and the Course Efficacy factor of the CSEI and b) $r=-.48$ between the Academic Stress factor of the CSI and the Social Efficacy factor of the CSEI. Correlations ranged from $r=-.24$ to $r=-.63$. The researcher conducted internal consistency tests on the current sample and obtained alpha values for the overall measure ($\alpha=.89$), the course efficacy factor ($\alpha=.83$), the social efficacy factor ($\alpha=.84$), and the efficacy for coping with others factor ($\alpha=.73$).

The CSEI appears to be an academic SE measure that will capture the college specificity that is the aim of the current study. It will also serve to strengthen the link

between SE and OE (as discussed in the literature review), which in turn should build the case for a link between OE and personality, as SE and personality have already been shown to be linked (also discussed in the literature review).

Your First College Year

The Your First College Year (YFCY; Astin, 1993) measure is produced yearly by The University of California at Los Angeles. The original measure includes 50 items; however in this study 18 items were used. The items are answered with higher scores indicating less satisfaction. The items on the YFCY measure used in the current study are divided into two sections, one regarding satisfaction with the institution (11 items; labeled College Satisfaction Scale for the purposes of this study) and another regarding satisfaction with campus life (7 items; labeled Campus Life Scale for the purposes of this study). The college satisfaction items concern a student's level of satisfaction with facilities and services available at a given institution; the internal consistency for this scale is $\alpha=.88$ in this sample. The campus life satisfaction items concern a student's level of satisfaction with the availability of facilities or opportunities and satisfaction with interactions a student has (with other students, faculty, etc.); the internal consistency for this scale is $\alpha=.82$ in this sample.

Because the YFCY Campus Life Scale asks the participant about facilities or opportunities that may not be available at each institution or to every student, it allowed a response of "no experience/not available" on that section. As a result, individual item means will be examined. Therefore the results of the section were broken down by correlations between the EOE-R and each of the 11 items in the section. The results are included in the Results section of the paper.

The researcher computed the participants' scores for the YFCY College Satisfaction Scale. Because the measure is reverse-scored (meaning that higher scores indicate less satisfaction), the researcher still expected the instruments to be positively correlated from a conceptual standpoint but negatively correlated statistically. For conceptual purposes, the researcher examined the correlations for each part of the YFCY measure and the EOE-R separately.

Description of Sample

The researcher examined the sample divided by sex in order to describe the sample and to see whether there were significant differences between mean scores on the measures for each sex. The means and standard deviations for males, females, and the total sample on each of the measures, factors, or scales covered by this study are presented below in Table 1.

Table 1
Comparison of Male, Female, and Total Sample Means and Standard Deviations

Scale	Total		Male		Female	
	Mean	SD	Mean	SD	Mean	SD
EOE-R	4.32	0.69	4.33	0.75	4.33	0.61
CSEI-total	109.05	17.50	109.80	17.65	107.86	17.08
CSEI-1	37.57	6.85	37.27	6.73	37.63	6.89
CSEI-2	31.66	7.17	32.24	7.16	30.98	7.10
CSEI-3	39.82	6.80	40.29	6.89	39.25	6.66
MPQ-WB	18.29	5.42	18.20	5.57	18.28	5.36
MPQ-ACH	12.01	4.71	12.26	4.78	11.72	4.65
MPQ-STR	11.58	6.73	10.78	6.52	12.27	6.94
MPQ-CTR	13.48	4.46	12.29	4.39	14.43	4.32
MPQ-PE	154.58	13.15	155.39	13.16	153.73	13.26
MPQ-NE	135.13	14.19	137.53	14.90	133.10	13.48
MPQ-CST	156.91	13.68	151.32	13.08	161.55	12.53
YFCY-2	2.40	0.59	2.46	0.67	2.35	0.52
YFCY-1a	2.10	0.57	2.20	0.52	2.01	0.60
YFCY-1b	1.84	0.70	1.95	0.78	1.74	0.62
YFCY-1c	1.76	0.70	1.76	0.75	1.76	0.66
YFCY-1d	2.49	0.91	2.53	0.96	2.49	0.84
YFCY-1e	2.37	0.99	2.38	1.05	2.39	0.94
YFCY-1f	2.64	0.96	2.74	0.95	2.58	0.95
YFCY-1g	2.57	0.94	2.62	0.94	2.53	0.94
YFCY-1h	2.50	1.11	2.45	1.08	2.56	1.14
YFCY-1i	2.37	0.87	2.50	0.98	2.22	0.73
YFCY-1j	1.86	0.84	2.05	0.94	1.68	0.70
YFCY-1k	2.38	0.82	2.47	0.90	2.31	0.75

Total sample size $N=173$, males $n=79$, females $n=94$. EOE-R is the Educational Outcome Expectancy Scale-Revised (Springer et al., 2001); CSEI is the College Self-efficacy Instrument (Solberg et al., 1993); CSEI-1, 2, and 3 are the three factors of the CSEI (Course Efficacy, Social Efficacy, Coping With Others, respectively); MPQ is the Multidimensional Personality Questionnaire (Tellegen, 1982; Tellegen & Waller, in press); The following are primary scales of the MPQ: MPQ-WB is Well Being, MPQ-ACH is Achievement, MPQ-STR is Stress Reaction, and MPQ-CTR is Control; The following are higher-order factors of the MPQ: MPQ-PE is Positive Emotionality, MPQ-NE is Negative Emotionality, and MPQ-CST is Constraint; YFCY-2 is the mean score for the second part of the Your First College Year measure (Astin, 1993), labeled College Satisfaction; YFCY-1a through k are the individual items of the first part of the YFCY measure, labeled Campus Life Satisfaction. Individual items for the YFCY-1 are listed in the Appendix. Mean differences greater than one-half standard deviation between sexes are bolded.

Overall, the sample showed EOE-R scores in the upper range, given that the mean score of 4.32 is on a scale of 1-6. This result indicates positive educational OEs in the sample. Male and female scores on the EOE-R were identical. For the CSEI, the current sample reported positive college SE scores in that the mean score of 109.05 translates to an

answer somewhere between “somewhat confident” and “confident” (of the given choices for the measure, ranging from “totally unconfident” to “totally confident”) on each of the CSEI’s 20 items. In terms of personality, the trait garnering the highest means was Well-Being, followed by Control. The positive outlook of the sample was also confirmed by higher scores overall and for men and women on the Positive Emotionality higher order factor along the possible range. The mean score of 2.40 on YFCY’s Campus Life satisfaction is comparable to a response of “satisfied” (on a range of “very satisfied” to “very dissatisfied”) on each of the 7 items in that scale.

As one can see in Table 1, the two sexes are very similar in terms of mean scores and standard deviations. The researcher made the comparisons by examining all of the confidence intervals to find non-overlapping intervals between males and females. Overall, based on comparison of 95% confidence intervals, only three means were different between males and females. In this sample, females scored higher on the MPQ primary scale Control than males did, with a 95% confidence interval of 13.53 – 15.34 compared to an interval of 11.29 – 13.30 in the male sample ($p < .01$). As discussed in the Measures section, higher Control scores indicate caution, reflection, and rationality (Tellegen, 1982). Females also scored higher in the MPQ higher order factor Constraint. The females had a 95% confidence interval of 158.93 – 164.18 compared to an interval of 148.33 – 157.31 in the male sample ($p < .001$). Higher Constraint scores indicate caution, lower likelihood of risk-taking behavior, conventionality, and traditional values (Tellegen, 1982). However, the Constraint scale did not factor into the hypotheses of Study 2 beyond the primary scale Control (conceptually linked to and correlated with Constraint; Tellegen, 1982) being included in Hypothesis 4.

The third mean difference between males and females was found on one of the individual items of the YFCY measure found in the Campus Life Satisfaction section. The item asks the participants to rate their level of satisfaction with the “recreational facilities” available at the institution. In this instance, females had higher satisfaction scores for the item (the item is reverse scored, meaning that lower scores indicate higher satisfaction). The 95% confidence interval for females was 1.52 – 1.83 compared to an interval of 1.84 – 2.26 in the male sample ($p < .01$).

The researcher inspected the sample means for each of the instruments included in the study. As a comparison, he also inspected the means provided in prior research. A difference is considered to be present when the current sample differs from previous samples by at least a half standard deviation.

Sample Comparison

For the most part, in terms of mean scores the current sample was quite similar to those reported in earlier research. What follows is a discussion of the areas in which the current sample means differed from those of past samples by more than one standard deviation. There were only a few differences found between current means and those reported in prior research, all of which occurred on the primary scales of the MPQ. The researcher found most of these differences of slightly above one standard deviation in females. One area showed mean differences exceeding one standard deviation. The means are shown in Table 2 below.

Table 2
**Differences Between Means and Standard Deviations Between
 Current and Prior Sample**

MPQ scale	Current		Prior	
	M	SD	M	SD
Traditionalism _a	16.74	4.39	13.00	5.80
Absorption _a	16.95	7.33	21.40	6.90
Alienation _a	4.32	3.80	2.00	2.70
Alienation _b	5.36	4.14	2.90	3.70

a. MPQ primary scale mean differences for females

b. MPQ primary scale mean differences for males.

Prior means obtained from college sample in Tellegen, 1982.

The preceding table shows differences in areas of Traditionalism and Absorption primary scales for females and differences in Alienation for both males and females. The researcher's female sample appears to have higher Traditionalism scores than the prior female sample using the standard of a greater-than-half one standard deviation difference. Given that high scores on Traditionalism indicate identification with institutions and a strict moral code, the differences could be due to any number of factors. Similar to the Traditionalism means, the Absorption means for females differ as well. The current female sample appears to show less Absorption—emotional responses to engaging stimuli and mystical awareness—than the prior female sample. Such a personality does not appear to be related to college outcome expectancies, so just as with Traditionalism the researcher is loath to assume what may be at the root of the differences.

Both the males and the females exhibited higher mean scores on Alienation than the prior sample using the standard of a greater-than-half one standard deviation difference between these scores and prior ones. Higher scores on Alienation are indicative of feelings of bad luck or victimization. While such a personality style could hardly be considered a strongly positive one, the researcher cannot draw any conclusions as to why these differences

appear from a theoretical standpoint given the apparent lack of connection between educational OEs and the “Alienated” personality. It should be noted that all of the differences found in this section were on scales that were not up for examination as part of the research hypotheses.

Procedures

Data for Study 2 were collected as part of five 180 minute-long testing sessions that included the EOE-R, the MPQ, the Your First College Year measure, the CSEI, and demographic questions. Students completed two other measures that were not part of this study. Participants volunteered to take part in the study for extra credit in psychology courses. There was no penalty for participants that did not finish the session. There was also no penalty for those choosing not to take part in the session.

Operationalized Hypotheses

Based on the information and literature presented, the researcher will investigate each hypothesis in the method described below:

1. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with college SE, as measured by the CSEI.
2. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with Well-Being and Achievement, as measured on the MPQ.
3. College-related Educational OE, as measured by the EOE-R, will be negatively and moderately correlated with Stress Reaction, as measured on the MPQ.
4. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with Control, as measured on the MPQ.

5. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with College Satisfaction, as measured by the YFCY College Satisfaction Scale.

CHAPTER 4: MANUSCRIPT DRAFT; THE DEVELOPMENT OF THE REVISED VERSION OF THE EDUCATIONAL OUTCOME EXPECTANCY SCALE

As noted in Chapter 1, the dissertation used an alternate format. Although Chapter 4 is traditionally the section that reports the results, in the alternate format, Chapter 4 is a manuscript draft, a more succinct version of the dissertation prepared according to the standards used in manuscript submission. The information that would have been covered in Chapter 4 of the traditional format, i.e. the results of the study, is still covered in the alternate format. The first part of the results is covered in the “Results” section of Chapter 4 of the dissertation and the second part—the additional analyses—is covered in Chapter 5 of the dissertation. Therefore Chapter 4 proceeds like a self-contained manuscript draft, complete with an introduction, method, results, and discussion section. The dissertation results continue with Additional Analyses in Chapter 5.

Abstract

Lent, Brown, & Hackett’s (1994) social cognitive career theory (SCCT) proposes that the three processing mechanisms that underlie the development of educational interests, persistence, and achievement are self-efficacy (SE), outcome expectancies (OEs), and goal representations. The researcher had two goals for this paper: to revise a measure of educational outcome expectancies, the Educational Outcome Expectancy Scale-Revised (EOE-R; Springer, Larson, Tilley, & Gasser, 2001) and obtain initial validity and reliability estimates for the measure. The researcher conducted an exploratory factor analysis and provided reliability estimates. He also obtained estimates of convergent validity for the measure using a measure of college SE, the College Self-Efficacy Instrument (CSEI; Solberg, O’Brien, Villareal, & Kennel, 1993) and a measure of personality, the

Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press). In addition, he obtained an estimate of criterion validity using a measure of satisfaction for college students, the Your First College Year measure (YFCY; Astin, 1993). The results supported a 23-item single-factor model with internal consistency of $\alpha=.93$. The results also supported convergent and criterion validity estimates of the EOE-R with expected significant correlations with the CSEI, with some primary scales of the MPQ, and with the YFCY. The results supported the positive correlation between educational OE and college SE as theorized in SCCT and found in the literature. The results added to the relative lack of literature by supporting a relation between educational OE and some facets of personality. Finally, results also support the positive relation between OE and satisfaction as conceptually discussed (Bandura, 1986; Lent et al., 1994).

Introduction

According to Lent, Brown, & Hackett's (1994) social cognitive career theory (SCCT), outcome expectancies (OEs) are personal beliefs about probable outcomes. Lent et al.'s SCCT is based on the application of social cognitive theory (SCT; Bandura, 1986) to the career area. According to SCT, people act partially on the beliefs they have about the possible consequences of their actions. The areas in which these consequences can be manifested include, but are not limited to, physical, social, self-evaluative, and educational outcome expectancies. In other words, OEs are domain-specific.

For the most part in the literature, the preceding statement has been taken quite literally. Outcome expectancies have been studied in a very domain-specific fashion even within the educational area. Such lines of study include OE domains like mathematics and science. The literature includes multiple specific academic subject areas in the study of educational OE but does not include the context in which these academic subjects are completed. That is, there is little to no mention of outcome expectancies for the completion of a college degree. The researcher argues that a well-defined domain of college degree outcome expectancies can be informative to the study of SCCT without having to be restricted to each specific subject. Rather, college degree OE—expectations linked to the pursuit of a bachelor's degree regardless of academic subject (major)—is an OE in and of itself and can be studied in much the same way as mathematics OE and science OE. Because college degree OE is not split by academic subject, it is closer to an overall educational OE than the academic subject-specific OEs: it takes into account the expectations of the student for her or his degree regardless of the area of study and, in addition, takes into account the expectations she or he has for the cumulative effect of her or his education.

With respect to SCCT, OEs are important because they underlie the functioning of the model. Another important piece of the SCCT model is self-efficacy (SE). Unfortunately, whereas SE measures abound, OE measures do not. For example, a search of the recent literature for OE measures that met SCCT's definition of outcome expectancy yielded five articles that contained potential educational OE measures. This figure is based on the requirements that the scale must tell the researcher something across items (in other words, there must be some form of summing procedure that yields results informative of an overall educational OE of the participant) and it must be applicable to a wide range of people, especially college students. An appropriate scale would be tailored to college students' level of educational attainment.

There have been relative few attempts to capture the construct of educational OE in a format applicable to a wide range of subjects. Brooks and Betz (1990) created a measure of occupational values, but that measure was based on examining each item individually rather than summing across the items. Multiple papers have proposed and developed outcome expectancy scales that maintain utility within a smaller range than desired for the purposes of this paper. Riggs, Warka, Babasa, Betancourt, and Hooker (1994) created the Personal Outcome Expectancy Scale. Even though this scale has been factor analyzed, it still does not meet the criteria for an educational OE measure because it is intended for people already in the workplace and is not appropriate for college students.

Another measure (Bores-Rangel, Church, Szendre, & Reeves, 1990) provided outcome expectancy scores based on a ranking of the most important value—or, in the language of Lent et al. (1994), consequences you desire—out of a list of values. Hackett, Betz, Casas, and Rocha-Singh (1992) developed the Outcome Expectations Scale.

Unfortunately this scale is limited in its focus to successfully completing a bachelor's degree in engineering. Other related educational OE measures have focused in subject-specific outcomes (e.g. Fouad & Smith, 1996; Fouad, Smith, & Enochs, 1997) so those measures were not considered.

For purposes of this paper, the realm of choice is the pursuit of an undergraduate degree. Again, the specifics sought by the current research are that the scale must inform the researcher across items, be tailored to the student's level of educational attainment, and be applicable to a wide range of participants. The lone measure that attempts to capture the construct of educational OE using the preceding criteria is the Educational Outcome Expectancy Scale (EOE; Springer, Larson, Tilley, & Gasser, 2001). The EOE is a six-item Likert-type scale to assess the results an individual expects from his or her bachelor's education. The six items allowed the scale to completely reflect the Holland RIASEC dimensions. The scale showed promise as single factor (educational OE) as supported by loadings provided in the Springer et al. (2001) paper. Tilley (2002) found validity for the EOE concurrently with academic self-efficacy (SE), as OEs and SE were correlated, as they should have been. He also found discriminant validity, as the EOE predicted persistence in pursuing an education but academic SE did not.

The EOE as it stands can be strengthened. As noted above, Tilley (2002) found support that the EOE represented educational OE well and discriminated it from academic SE and the EOE factor analysis (Springer et al., 2001) showed support for the EOE as a single factor measure of educational OE. However, there are concerns that a measure that is six items long is not enough to fully capture the construct of educational OE, especially given the theory described earlier in the introduction—namely that a measure of overall educational

OE in college students should not only measure the expectations they have in academic areas as the EOE does, but also focus on the overall expectations surrounding the completion of a college degree. As one would expect, additional concerns related to the addition of items such as the continued ability of the measure to represent a single factor (educational OE), the cohesiveness of the revised instrument, and multiple tests of validity also became apparent. The purpose of these two studies is to develop the EOE-Revised and provide initial validity and reliability estimates. First, new items were added to the EOE to more fully capture the construct and add items specific to college degree expectations. Second, initial estimates of construct validity were determined. The EOE-Revised (EOE-R) was factor analyzed to test whether there was evidence of a single, coherent factor. That factor is educational OE. Third, internal consistency was computed. Fourth, initial criterion validity estimates are provided. The criterion included for purposes of testing criterion validity is college satisfaction. Students with higher educational OEs should be more satisfied with college. Along with the classes of social and physical OEs was the anticipation of self-evaluative outcomes. Bandura (1986) stated that the anticipation of such self-evaluative outcomes may importantly affect career behavior. In other words, outcome expectancies are related to satisfaction. Therefore the researcher also tested EOE-R scores in the context of the participants' scores on a measure of college satisfaction. Finally, the researcher provided convergent validity estimates.

As noted at the outset, both outcome expectancies (OEs) and self-efficacy (SE) underlie the functioning of SCCT. The two constructs have been shown to be positively and moderately correlated in prior research (e.g., Brown, Lent, & Larkin, 1989; Lent, Brown, & Gore, 1997; Lent, Brown, & Hackett, 2000; Wheeler, 1983). Due to such evidence, it stands

to reason that a measure of a specific OE should be positively and moderately correlated with a measure of a similar type of SE. Because college education is the domain, it also stands to reason that the SE selected reflects that level of specificity. The EOE should be positively and moderately correlated with a measure of college-specific SE.

Some research has shown a link between personality and OEs (Fischer, Smith, Anderson, and Flory, 2003; Vollmer, 1984) but not to educational OEs as such. The researcher included a measure of personality, Tellegen's Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press) as an attempt to establish that link. The author expected positive correlations are between scores on the EOE-R and the MPQ scores on Well-Being, Achievement, and Control. The preceding MPQ scores were chosen as scores likely to be moderately and positively correlated with EOE-R scores because the researcher believed that they represented qualities that are likely to be more present in successful college students, much as high EOE-R scores should be. The expected negative correlation is between high scores on the EOE-R and the MPQ score of Stress Reaction. The preceding MPQ score was chosen as likely to be moderately and negatively correlated with EOE-R scores because the researcher believed that it represented qualities that are likely to hinder success in college students, and therefore should not be correlated positively with EOE-R scores.

The dissertation embodies two studies. The first study covers the revision process of item addition, factor analysis, and reliability estimates. The second study provides the validity estimates, namely the examination of the relation between educational OE and personality and between educational OE and college SE. There was also a need to provide criterion validity: namely, does the EOE-R predict college satisfaction? The first study set

out to establish the EOE-R as a solid measure of overall educational OE—something that is lacking at the current time—and the second provided initial validity estimates.

Again, the entire process discussed above is driven by one goal: the development of a reliable and valid measure of educational outcome expectancies. The paucity of educational OE measures alone is enough to incite the researcher to attempt to continue to develop and validate a measure of educational OE. It is important for SCCT to have reliable and valid measures of educational OE that cut across academic domains. The implications for studying and supporting SCCT are obviously linked to the development of reliable and valid OE measures. According to SCCT, educational OE is important in the development of interests, the career choice actions a person would make, and the extent to which a person would persist in career-relevant behaviors (Lent et al., 1994). The endeavor should be a priority for advancing SCCT. It is by addressing and studying these concerns that the field will advance understanding of the interplay between college students' overall educational OE and career development, choice, and persistence as posited by SCCT.

Study 1

There were two hypotheses. Based on the information and literature presented, the researcher investigated each hypothesis in the method described below:

1. The EOE-R will consist of one single factor and the items will load on that factor.
2. The EOE-R measure will demonstrate internal consistency with a strong α level.

Study 1 was primarily based on the construction of the EOE-R by adding items. The results of the instrument were examined through factor analysis. Study 1 was also meant to obtain internal consistency estimates for the EOE-R.

Item Domain

The researcher decided that the six-item structure of the original EOE was insufficient to measure the construct of EOE as it was discussed in the literature review. Namely, the EOE-R needed to represent an overall view of college rather than the six RIASEC domains of college (as hypothesized in Tilley, 2002); the perspective of educational OE as not being subject-specific but also being a construct that represented expectancies for outcomes related to the overall earning of a college degree and a construct related to satisfaction was discussed at length in the literature review. Specifically, Bandura (1986) discussed OEs as incorporating physical outcomes (e.g., earning more money), social outcomes (e.g., pride), and self-evaluative outcomes (e.g., making parents proud).

Therefore the researcher and two senior colleagues established in the vocational psychology research community met to discuss the content of the additional items. The group decided to produce three item types for addition to the original EOE to create the EOE-R: items capturing the expectations one would have as a result of getting a college education such as physical outcomes and social outcomes, and items capturing expectations for satisfaction as a result of achieving a college degree.

One example of an item representing physical outcomes is “be able to make more money.” An example of an item representing social outcomes is “make my family proud.” The preceding items are representative of a group of items added to the EOE-R in order to capture the need for physical outcomes and social outcomes discussed above. Beyond these, other items were included as representative of the general expectations one might have for obtaining a 4-year undergraduate college degree.

In order to capture the expectations one would have as a result of getting a college education, the researcher added twenty-five total items. Two of the items were added to address the expectations for satisfaction component discussed by Bandura (1986) and Lent et al. (1994). The remaining 23 items were added in order to capture possible content areas of what students expect from obtaining a college degree, including the aforementioned items addressing physical and social outcomes. A complete listing of the items of the EOE-R is included in the Appendix section.

Method

Participants

Data were collected from students ($N=1045$) at a large Upper-Midwestern university. The sample included 582 (56%) females and 463 (44%) males. The breakdown by class standing is as follows: freshman ($n=663$), 63%; sophomores ($n=246$), 23%; juniors ($n=97$), 8.5%; seniors ($n=49$), 5%; other/grad students ($n=4$), .5%. The breakdown by ethnic background is as follows: Caucasian/White ($n=927$), 88%; African-American ($n=30$), 3%; Asian-American/Pacific Islander ($n=38$), 4%; Latino/a-American ($n=20$), 2%; International Student ($n=13$), 1%; Multi-Racial ($n=11$), 1%; Native American ($n=3$), .5%; Other ($n=4$), .5%.

The Educational Outcome Expectancy Scale-Revised (EOE-R)

Springer et al. (2001) constructed the original EOE to measure educational OEs. The original EOE is a six item Likert-type scale that requires the participant to gauge from 1 to 6 to what extent he or she expects an outcome (item) when he or she has completed a bachelor's degree (1=not at all expecting the outcome, 6=very much expecting the outcome). Item examples include [To what extent do you expect to...] "be more competitive in the job

market” and “reduce the chance of being fired.”

Springer et al. (2001) provided the results of the factor analysis on the EOE. They decided on using one factor (educational OE) that accounted for 69% of the variance. The internal consistency was reported as $\alpha=.77$ for the females and $\alpha=.83$ for the males in the sample. The confirmatory factor analysis yielded loadings ranging from .45 to .89 for the females in the sample and .53 to .86 for the males in the sample. The internal consistencies in the second sample were $\alpha=.83$ for the females and $\alpha=.86$ for the males. Springer et al. (2001) conducted a Pearson product-moment correlation to find test-retest reliability for the EOE ($r = .48$). High scores on the EOE have been shown to be significantly related in a positive direction with academic outcomes such as higher GPA and academic persistence (Tilley, 2002).

For the purposes of linking the EOE directly to the undergraduate college setting, the EOE was expanded to include a) additional items addressing what students expect from obtaining a college degree and b) items derived from the conceptual relation between OE and satisfaction (Bandura, 1986). The items were generated by the researcher and two senior colleagues established in the vocational psychology research community. The scale is scored and structured just as the original EOE was. The Appendix contains the EOE-Revised in its entirety.

Procedures

Data on the EOE-R were collected as part of two 90 minute-long mass-testing sessions that included multiple other measures from other researchers. Participants volunteered to take part in the study for extra credit in psychology courses. There was no

penalty for participants that did not finish the session. There was also no penalty for those choosing not to take part in the session.

Results

For the purposes of addressing Hypothesis 1 the researcher conducted a factor analysis. The goal of the factor analysis was that the measure clearly captures one factor (educational OE). In order to test these goals, the researcher conducted an exploratory factor analysis. The researcher inspected the data for gender differences. The EOE-R factor loadings appeared similar across women and men and therefore the following sections address the EOE-R as it was analyzed, that is, with both sexes together.

Before any final factor analyses were conducted, the researcher reduced the pool of 34 items to 28 because 6 of the original items did not conceptually address the factor. It was decided that the items were addressing expectations for the process of going to college rather than the outcome of obtaining a college degree. The removed items did not add to the instrument and therefore only the 28 items left after the reduction were retained in the factor analysis. The removed items are labeled as “Deleted Process Items” in Table 3 at the end of the chapter.

A principal axis-factors extraction was performed through the Statistical Program for the Social Sciences – Student Edition (SPSS 10.0; 1999) on the 28 items retained for the analysis. Squared multiple correlations were used as the initial communality estimates, and the communalities were iterated. The principal-factors single-factor analysis yielded a factor with an Eigenvalue of 9.23 that accounted for 32.97% of the total variance.

The first and only factor, with 23 items, was labeled college educational OE. The factor had loadings ranging from .45 to .74, as described in Table 3. Using construct on

which the items were based, the factor represents a participant's expectations for the outcomes of completing a four-year college degree. A summary of the factor matrix, the item communalities, the item-total correlations, and the items that did not load on the factor are presented in Table 3 at the end of the chapter.

The highest loaders were items 33, 24, 37, and 32—all of which loaded at .70 or above. The items appear to hold the shared quality of addressing what one would normally expect from a successful transition from college to career: being more efficient at problem solving (item 33), being an “expert” in a chosen field (item 24), demonstrating that one can “succeed on my own” (item 37), and increased ability to “obtain a desired job” (item 32).

Items eliminated due to loading below .4 were items 8, 40, 38, 39, and 12, as shown in Table 3. Items 38-40 are strictly dealing with the very specific prospect of creating or designing a product (all three contain the words “design” and “product”) while item 12 also deals with the very specific possibility of working outdoors. Given that the EOE-R was created, among other reasons, to assess general college OEs, the preceding items were most likely too focused on one group of students to load well on the construct. Item 8 addresses the goal that one would make more money than her or his parents. While parents may have this goal for their children, this may not necessarily be a goal of many college students. Many of the wide variety of fields a college student could enter—or at least study as a major—do not guarantee particularly large salaries. In short, students did not respond to the item similarly to the 23 items loading above .4.

The researcher examined the internal consistency of the EOE-R for Hypothesis 2 because the validation of the EOE-R includes obtaining a value for coefficient α that supports the claim that the EOE-R is internally consistent. The researcher conducted a

reliability analysis using SPSS 10.0 (1999) with the requirement that the measure obtain over a .80 value for coefficient alpha. The researcher used the value as the cutoff point between a solid and reliable instrument and one that is not.

The retained items with factor loadings greater than .40 ($n=23$) were internally consistent ($\alpha=.93$). These results suggest a single underlying educational OE factor. On the basis that only items that loaded at .40 or above would be included in the instrument, five items—in addition to the six dropped for conceptual reasons, as explained in the previous sections—did not load on the factor and were dropped.

Other solutions besides the one factor solution were examined and are available from the author. An alternate six-factor solution is presented in the Additional Analyses (Chapter 5). It appeared that a one-factor solution was supported by the data and was conceptually the most coherent.

Discussion

The results support both hypotheses of Study 1, namely that the EOE-R can be presented as a single factor and that the 23 items in this sample are internally consistent. The results, specifically those of Hypothesis 1, hold interesting data with regards to the makeup of OEs in general and educational OE in particular. For example, although the researcher did not find papers incorporating the satisfaction expectancy component into measures of OE—an oversight the original EOE was revised to correct—the researcher did find support for a satisfaction expectancy component to load in a way similar to other educational OE items. As one can see in the Tables section, the satisfaction expectancy items were among the higher loaders, at .67 and .68. The finding supports Bandura's (1986) statement that outcome expectancies include a satisfaction expectancy component. In addition, the results of the

factor analysis also show support for educational OE as a single factor that need not be broken down by subject or interest area.

With respect to Hypothesis 2, the internal consistency of the measure was reflected in the .93 alpha statistic. The original EOE had an alpha statistic ($\alpha=.83$) with fewer items. However, the EOE-R includes a more thorough coverage of the item domain. The revision created a more focused measure than the original that was based on Bandura's (1986) description of OEs and addressed OEs from a more complete conceptual standpoint.

The researcher obtained an internally consistency estimate that supported his hypotheses ($\alpha=.93$). The researcher also found support for the EOE-R as a single-factor measure of college OE with 23 items that loaded at .40 or above on the factor. Using these 23 items, the researcher took the next step and obtained validity estimates for the EOE-R in Study 2.

Study 2

As noted earlier in the paper, the primary focus of Study 2 was to establish validity estimates for the EOE-R. The measures employed were the College Self-efficacy Instrument (CSEI; Solberg et al., 1993) and the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press) for convergent validity and the Your First College Year measure (Astin, 1994) measure for criterion validity.

Operationalized Hypotheses

Based on the information and literature presented, the researcher investigated each hypothesis in the method described below:

1. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with college SE, as measured by the CSEI.
2. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with Well-Being and Achievement, as measured on the MPQ.
3. College-related Educational OE, as measured by the EOE-R, will be negatively and moderately correlated with Stress Reaction, as measured on the MPQ.
4. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with Control, as measured on the MPQ.
5. College-related Educational OE, as measured by the EOE-R, will be positively and moderately correlated with College Satisfaction, as measured by the YFCY College Satisfaction Scale.

Method

Participants

Data were collected from students ($N=173$) at a large Upper-Midwestern university as part of five separate testing sessions. The sample included 94 (54%) females and 79 (46%) males. The breakdown by class standing is as follows: freshman ($n=103$), 60%; sophomores ($n=40$), 23%; juniors ($n=14$), 8%; seniors ($n=16$), 9%. The breakdown by ethnic background is as follows: Caucasian/White ($n=157$), 91%; African-American ($n=6$), 4%; Asian-American/Pacific Islander ($n=2$), 1%; Latino/a-American ($n=4$), 2%; International Student ($n=2$), 1%; Other ($n=1$), 1%.

Instruments

Educational Outcome Expectancy Scale-Revised (EOE-R)

The 23 items used in Study One as the EOE-R were used in Study Two as the measure of educational OE. The internal consistency of the measure in the second sample was $\alpha=.93$

Multidimensional Personality Questionnaire (MPQ)

The MPQ (Tellegen, 1982; Tellegen & Waller, in press) is a self-report questionnaire that measures normal-range personality. There are three higher-order factors (personality traits) of the MPQ: Positive Emotionality (PE), Negative Emotionality (NE), and Constraint (CT). High scores on PE convey self-efficacy, active involvement in social and work environments, and readiness to experience the positive emotions that come with these environments. In contrast, low scorers on PE convey low self-efficacy, less active involvement in social and work environments, and a lower likelihood of experiencing positive emotions in conjunction with these environments.

High scorers on the second factor, NE, convey stress, a negative emotional response bias, and enmeshment in adversarial relations. Low scorers on NE convey less likelihood of negative emotional response and a less adversarial interpersonal outlook. High scorers on the third factor, CT, convey caution, planfulness, less risk-taking behavior, conventionality, and traditional values. Low scorers on CT convey impulsiveness, danger-seeking, and rejection of traditional values. DiLalla, Gottesman, Carey, & Vogler (1993) provided construct validity estimates for the internal structure of the MPQ. They conducted a joint factor analysis of the primary and higher order scales of the MPQ and the Minnesota Multidimensional Personality Questionnaire-2 (MMPI; 1989). The analysis found

meaningful associations between the MPQ primary scales and MMPI scales hypothesized to be theoretically related. DiLalla et al. reported a four-factor solution that accounted for 64% of the variance in the MMPI and MPQ primary scale scores.

The following is a description of each of the primary scales of the MPQ.

Well Being. Those that scored high on the Well-Being scale described themselves as happy and cheerful. They feel good about themselves and are optimistic about the future. They also report living an exciting and active life. Conversely, low scorers on this scale reported few joyous or exciting experiences and reported being happy only on rare occasions (Tellegen, 1982). Internal consistency for the Well-Being scale has been reported as $\alpha=.89$ (Staggs, 2002).

Social Potency. Those that scored high on the Social Potency scale described themselves as forceful and decisive. They enjoy leadership roles and the ability to influence others. In addition, they like to be noticed at social events. Conversely, low scorers on this scale do not like to take charge or make decisions; they do not aspire to leadership roles nor do they wish to be the center of attention at social events (Tellegen, 1982). Internal consistency for the Social Potency scale has been reported as $\alpha=.89$ (Staggs, 2002).

Achievement. Those that scored high on the Achievement scale described themselves as hard workers. They like demanding projects that require long hours. They show many characteristics that would commonly be described as perfectionistic, such as putting work and accomplishment first and persisting in the face of adversity. Conversely, low scorers on this scale avoid working harder than is absolutely necessary and would not consider

themselves to be perfectionists (Tellegen, 1982). Internal consistency for the Achievement scale has been reported as $\alpha=.84$ (Staggs, 2002).

Social Closeness. Those that scored high on the Social Closeness scale like people and value having interpersonal connections. They are affectionate and do not mind turning to others for comfort. As one can see, this does not seem to be a particularly negative type of affective response. Thus, while the scale is tied to the NE factor, the correlation is a negative one. Low scorers on this scale prefer to be alone and do not mind being distant from others or working out problems on their own (Tellegen, 1982). Internal consistency for the Social Closeness scale has been reported as $\alpha=.85$ (Staggs, 2002).

Stress Reaction. Those that scored high on the Stress Reaction scale described themselves as nervous, worrisome, and vulnerable. They are also easily upset and can feel miserable for no particular reason. Conversely, low scorers on this scale are able to deal with fears and worries quite easily; they are not particularly guilt-ridden (Tellegen, 1982). Internal consistency for the Stress Reaction scale has been reported as $\alpha=.89$ (Staggs, 2002).

Alienation. Those that scored high on the Alienation scale feel as if they are victims of bad luck. They feel mistreated and targeted by others for false rumors or betrayal. Conversely, low scorers do not feel victimized and feel as if they are treated fairly (Tellegen, 1982). Internal consistency for the Alienation scale has been reported as $\alpha=.81$ (Staggs, 2002).

Aggression. Those that scored high on the Aggression scale described themselves as willing to hurt others for their own advantage. They will actually resort to physical aggression. In addition, they are vindictive and take pleasure in the discomfort of others.

Conversely, low scorers on this scale will not take advantage of others and are not violent. Unlike high scorers, they do not like to witness physical aggression and do not enjoy the misfortunes of others (Tellegen, 1982). Internal consistency for the Aggression scale has been reported as $\alpha=.76$ (Staggs, 2002).

Absorption. Those that scored high on the Absorption scale described themselves as emotionally responsive to engaging stimuli. They also report episodes of mystical awareness and cross-modal experiences, such as thinking in images. Conversely, low scorers on this scale hold a far more realistic and pragmatic frame of reference (Tellegen, 1982). Internal consistency for the Absorption scale has been reported as $\alpha=.88$ (Staggs, 2002).

Control. Those that scored high on the Control scale described themselves as reflective, cautious, and careful, almost to a plodding pace. They also place value in rationality and sensibility. Conversely, low scorers on this scale are impulsive and spontaneous almost to a point of recklessness and carelessness at times (Tellegen, 1982). Internal consistency for the Control scale has been reported as $\alpha=.86$ (Staggs, 2002).

Harm Avoidance. Those that scored high on the Harm Avoidance scale prefer less adventurous activities, even if these activities are less than interesting as well. They are even willing to participate in tedious behaviors so as to avoid danger. Conversely, low scorers on this scale are thrill seekers that may expose themselves to injury (Tellegen, 1982). Internal consistency for the Harm Avoidance scale has been reported as $\alpha=.84$ (Staggs, 2002).

Traditionalism. Those that scored high on the Traditionalism scale endorse high moral standards, especially those associated with religion or institutions. They consider themselves strict, not only in personal moral code, but also in child rearing, as they look

down upon permissiveness. In addition, they condemn the disregard of others for selfish purposes. Conversely, low scorers on this scale are not particularly concerned with the importance of morals, consider selfishness as an option on occasion, and most likely find religion to be outdated and prudish (Tellegen, 1982). Internal consistency for the Traditionalism scale has been reported as $\alpha=.85$ (Staggs, 2002).

The College Self-Efficacy Inventory (CSEI)

The CSEI (Solberg, O'Brien, Villareal, & Kennel, 1993) is a measure of college-related SE. The construct was defined as a college "student's degree of confidence that she or he could successfully complete a given college-related task" (Solberg, 80). The CSEI is a 20-item instrument with 3 subscales: course efficacy (SE related to completing course requirements such as assignments and tests; 7 items), social efficacy (SE related to working with others in the college environment such as professors and friends; 6 items), and roommate efficacy (SE related to living and relating with roommates such as dividing apartment space; 7 items).

The internal consistency for the total scale was $\alpha=.91$ (Solberg, Gusavac, Hamann, Felch, Johnson, Lamborn, & Torres, 1998). Subscale coefficients ranged from .89 to .62. In terms of validity, Solberg (1998) computed correlations between the CSEI and the College Stress Inventory (CSI; Solberg et al., 1998), a 20-item instrument measuring stress of college student participants as they complete college-related tasks. The results showed negative correlations between all three factors of the CSI and all three factors of the CSEI. The highest correlations were a) $r=-.63$ between the Academic Stress factor of the CSI and the Course Efficacy factor of the CSEI and b) $r=-.48$ between the Academic Stress factor of the CSI and the Social Efficacy factor of the CSEI. Correlations ranged from $r=-.24$ to $r=-.63$.

The researcher conducted internal consistency tests on the current sample and obtained alpha values for the overall measure ($\alpha=.89$), the course efficacy factor ($\alpha=.83$), the social efficacy factor ($\alpha=.84$), and the efficacy for coping with others factor ($\alpha=.73$).

Your First College Year

The Your First College Year (YFCY; Astin, 1993) measure is produced yearly by The University of California at Los Angeles. The original measure includes 50 items; however in this study 18 items were used. These items include such questions as “If you could make your college choice over, would you still choose to enroll at your current (or most recent) college?” followed by a range of options from “definitely yes” to “definitely no” and “don’t know.” (p. 2) The items are answered with higher scores indicating less satisfaction. The items on the YFCY measure are divided into two sections, one regarding satisfaction with the institution (11 items; labeled College Satisfaction Scale for the purposes of this study) and another regarding satisfaction with campus life (7 items; labeled Campus Life Scale for the purposes of this study). The college satisfaction items concern a student’s level of satisfaction with facilities and services available at a given institution; the internal consistency for this scale is $\alpha=.88$ in this sample. The campus life satisfaction items concern a student’s level of satisfaction with the availability of facilities or opportunities and satisfaction with interactions a student has (with other students, faculty, etc.); the internal consistency for this scale is $\alpha=.82$ in this sample.

Because the YFCY Campus Life Scale asks the participant about facilities or opportunities that may not be available at each institution or to every student, the YFCY measure allowed a response of “no experience/not available” on that section. As a result, individual item means will be examined. Therefore the results of the section were broken

down by correlations between the EOE-R and each of the 11 items in the section. The results are included in the Results section of the paper.

The researcher computed the participants' scores for the YFCY College Satisfaction Scale. Because the measure is reverse-scored (meaning that higher scores indicate less satisfaction), the researcher still expected the instruments to be positively correlated from a conceptual standpoint but negatively correlated statistically. For conceptual purposes, the researcher examined the correlations for each part of the YFCY measure and the EOE-R separately.

Procedures

Data for Study 2 were collected as part of five 180 minute-long testing sessions that included the EOE-R, the MPQ, the Your First College Year measure, the CSEI, and demographic questions. Students completed two other measures that were not part of this study. Participants volunteered to take part in the study for extra credit in introductory psychology courses. There was no penalty for participants that did not finish the session. There was also no penalty for those choosing not to take part in the session.

Results

Table 4, as included at the end of this chapter, presents the correlation matrix for all measures included in Study 2 (EOE-R, CSEI, MPQ, and YFCY) by sex. Because the correlations appeared different by sex, the hypotheses will be examined separately for women and men.

The results for Study 2 are presented below and broken down by the type of validity each hypothesis was meant to assess.

Hypotheses 1-4: Convergent Validity

For Hypothesis 1, the researcher expected the EOE-R to be significantly positively and moderately correlated with the CSEI, a measure of college-specific SE. The result was that the CSEI and the EOE-R were significantly positively correlated ($r = .27, p < .001$) for the overall sample and for both the female and male sample separately ($r_s = .31, .33, p_s < .01$). These findings support the first hypothesis.

When broken down by factor in the overall sample, the EOE-R mean score and the CSEI Course Efficacy factor were not significantly correlated in the overall sample ($r = .13, p > .05$) or for the female sample ($r = .09, p > .05$). However, the EOE-R mean score and the CSEI Course Efficacy factor were significantly correlated in the male sample ($r = .30, p > .01$). The EOE-R and the CSEI Social Efficacy factor were significantly and positively correlated in the total sample ($r = .25, p < .001$) and in the female and male samples separately ($r_s = .30, .31, p_s < .01$). The EOE-R and the CSEI Coping With Others factor were also significantly and positively correlated in the total sample ($r = .28, p < .001$) as well as in the male and female samples separately ($r_s = .28, .39, p_s < .05, .001$). Altogether the researcher found support for Hypothesis 1 not only for the EOE-R and CSEI overall measure, but also by CSEI factors as well.

For Hypothesis 2, the results indicated a significant positive correlation between the Well-Being primary scale of the MPQ and the EOE-R mean score overall ($r = .26, p < .001$) and separately for women ($r = .26, p < .05$) and men ($r = .30, p < .01$). These findings provide support for Hypothesis 2; namely that more positive college OEs are associated with a stronger sense of well-being.

The results also indicated a significant modest positive correlation between the Achievement factor scale of the MPQ and the participants' mean score on the EOE-R for the overall sample ($r = .17, p < .03$). The results indicated a non-significant correlation ($r = .13, p > .05$) between the Achievement factor scale of the MPQ and the mean score on the EOE-R for women. The results also indicated a non-significant correlation ($r = .18, p > .05$) between the Achievement factor scale of the MPQ and the mean score on the EOE-R for men. These results provide some support for the second hypothesis although the correlation was smaller than expected, especially when split by sex, where significant results were not found. However, the findings from the overall sample indicate that more positive college OEs relate somewhat to higher willingness to work hard and persist in the face of adversity.

The researcher expected a significant negative moderate correlation between the Stress Reaction scale of the MPQ and the participants' mean score on the EOE-R. The results indicated a non-significant negative correlation ($r = -.12, p > .05$) for the overall sample. However, there was a significant negative correlation for females ($r = -.27, p < .05$) while there was not a significant correlation for males ($r = .04, p > .05$). The results split by sex did provide support for Hypothesis 3 for women, as women's scores on the EOE-R were significantly and negatively correlated with their scores on the Stress Reaction primary scale of the MPQ.

The researcher expected a significant positive moderate correlation between the MPQ Control primary scale and the EOE-R mean score. The results indicated a non-significant negative correlation for the overall sample ($r = -.05, p > .05$). The results also indicated a non-significant negative correlation for women ($r = -.01, p > .05$) and for men ($r = -.13, p > .05$). The researcher concluded that the results did not support Hypothesis 4.

Although not part of the hypotheses, the MPQ Positive Emotionality factor was also moderately related to the EOE-R ($r = .34, p < .001$) for the total sample and for both men and women separately ($r_s = .34, .38, p_s < .01, .001$). This indicates a relation between EOE-R scores and self-efficacy, active involvement in social and work environments, and readiness to experience the positive emotions that come with these environments, according to Tellegen's (1982) description of the Positive Emotionality factor.

Hypothesis 5: Criterion Validity

The researcher also expected the EOE-R to be significantly and moderately correlated with the YFCY College Satisfaction Scale. The researcher conducted a Pearson product-moment correlation between the mean score of the YFCY College Satisfaction Scale and the participant's mean score on the EOE-R. The results indicated a significant negative correlation ($p < .05$) with a coefficient of $-.16$ for the overall sample. The correlation was significant and in a negative direction as expected due to the reverse scoring. The results also indicated a significant, negative, and moderate correlation between College Satisfaction as measured by the YFCY measure and scores on the EOE-R for women ($r = -.32, p < .01$) but not for men ($r = -.03, p > .05$). These findings support the fifth hypothesis for women but not for men.

The individual correlations between items on the YFCY Campus Life Satisfaction scale and the EOE-R are presented in Table 5. Only two correlations were significant for the total sample, namely classroom facilities ($r = -.20$) and orientation for new students ($r = -.17$). There were two significant correlations as well, for females, classroom facilities ($r = -.28$) and computer facilities ($r = -.27$). None of the correlations were significant for the males, in part due to the smaller sample size. Interestingly, males with higher outcome

expectancies were less satisfied with psychological services ($r = .24$) although the correlation was not significant.

Discussion

The purpose of Study 2 was to obtain validity estimates for the EOE-R. As noted in the Introduction, convergent validity is established when the scores on the measure in question are correlated with scores on a measure of a related construct. And, as noted at the outset, both outcome expectancies (OEs) and self-efficacy (SE) underlie the functioning of SCCT. The two constructs have been shown to be positively and moderately correlated in prior research (e.g., Brown, Lent, & Larkin, 1989; Lent, Brown, & Gore, 1997; Lent, Brown, & Hackett, 2000; Wheeler, 1983). Due to such evidence, it stands to reason that a measure of a specific OE should be positively and moderately correlated with a measure of a similar type of SE. Because college education is the domain, it also stands to reason that the SE selected reflects that level of specificity.

The results reflected the positive correlation between college SE and educational OE, as discussed in the research above. The EOE-R and the CSEI were significantly and positively correlated not only at the overall level ($r = .26$), but within each sex as well (for males, $r = .33$; for females, $r = .31$). The result adds information to the ongoing research on the relation between OE and SE by exploring educational OE with college SE, a construct not nearly as prevalent in the extant research as career SE, for example. Beyond that, the result of Hypothesis 1 supports the existing research because the findings are consistent with those showing a positive correlation between SE and OE.

The CSEI was broken down into three factors (Solberg et al., 1998). The EOE-R and Course Efficacy were not significantly correlated ($r = .13$, $p > .05$) for the overall sample,

but the data showed a significant positive correlation between EOE-R scores and Course Efficacy scores ($r = .30, p < .01$) for men, whereas for women it did not ($r = .09, p > .05$). This is an indicator that self-efficacy for course activities like writing papers and taking notes is related to educational OEs for men in this sample but not for women. The result for men supports the significant moderate positive correlation ($r = .39, p < .001$) found between the original version of the EOE and the Academic Self-efficacy Scale (Larson, Toulouse, Ngumba, Fitzpatrick, & Heppner, 1994), a measure of academic SE, in Tilley (2002). This is an area that begs an interesting question that could be addressed by future research.

The EOE-R and the CSEI Social Efficacy factor were significantly and positively correlated ($r = .25, p < .001$) for the overall sample. There were negligible differences between the correlations for women and men in this case. When broken down by sex, the results still support the relation between college social efficacy and educational OE in the sample for males ($r = .31$) and for females ($r = .30$). The EOE-R and the CSEI Coping With Others factor were significantly and positively correlated as well ($r = .28, p < .001$) for women and men together. In this case, the relation was somewhat stronger for women ($r = .39$) than it was for men ($r = .28$) although both correlations were significant and in the expected positive direction. These results suggest that educational OE is related to efficacy for getting along with roommates, joining a student organization, and other related activities.

As discussed in the literature review, a link between personality and educational OEs had not been established as of yet, though personality has been shown to be related to other forms of OE (Fischer et al., 2003; Vollmer, 1984). The exact place personality holds in SCCT remains to be determined. Neither the Bandura (1986) paper nor the Lent et al. (1994) paper explicitly addressed the relation between personality and OE or SE.

Out of the four expected correlations between the EOE-R and primary scales of the MPQ, two were significant for women and one was significant for men. These results partially support the literature noted above that linked positive OEs and adaptive personality styles such as Well-Being and Achievement primary scales of the MPQ measured in the current research. High Well-Being scores are indicative of optimism about the future and being happy and cheerful. Conceptually, Well-Being scores should have been positively correlated with the EOE-R and this study supported that hypothesis for both sexes. Both correlations were significant, which does lend support to the hypothesized link between higher educational OEs and optimism about the future, as measured by the Well-Being score of the MPQ.

High Achievement scores are indicative of willingness to work hard and persist in the face of adversity. As Tilley (2002) found with the original EOE, educational OE is positively related to persistence in the college environment. The current research revealed a modest significant positive correlation ($r = .17, p < .03$) overall but not separately by sex. It may be that the null finding by sex was due to lack of power. But the findings were significant and in the expected direction (i.e. the hypothesis was supported) in the overall sample. It appears that there is some link between willingness to work hard and persist in the face of hardship is related to positive college OEs. This is a link worth exploring further.

Hypothesis 3 was supported for women only. That is, there was a difference on the Stress Reaction primary factor score on the MPQ for females versus males. Females had a significant negative correlation between the score and the EOE-R ($r = -.27, p < .05$). Males, however, did not show a significant correlation ($r = .04, p > .05$). Because the hypothesis was partially supported, it raises an interesting issue: why was a tendency to handle stress in

a negative fashion negatively related to positive college OE in women but not men?

According to the results it could be that the ability to handle stressful situations in men is not related to male college students' expectations for their college degree. Another likely scenario is that women could be more in touch with their ability to respond to stress and anticipate it better; therefore as stress increases, their outcome expectancies decrease.

Remembering that there is no research existing that addressed the relation between a nervous personality and educational OEs, the results of hypothesis three seem like a starting point for future research, given the differences between sexes.

One would also assume that personality traits of caution and planfulness would be positively related to expectations of positive outcomes of a college degree, but that result was not found. There was no extant research to support this idea, but rather a theoretical hypothesis based on what the researcher knew about OEs and what the Control scale of the MPQ measured. The results of Hypothesis 4 appear to be a starting point for research to ascertain if there is a relation between college OEs and the cautious and reflective personality.

As noted earlier in the paper, criterion validity is an assessment of the relation between the measure and other criteria (Kaplan & Saccuzzo, 2001). In SCCT, the hypothesis 11A states that educational OE should be positively related to reinforcing consequences that one has directly experienced. One of those reinforcing consequences would be satisfaction with the college experience. No one has tested this hypothesis in educational OE domain.

The researcher decided to examine the correlations for each part of the YFCY measure and the EOE-R separately and look at the institutional piece of the YFCY on an item-by-item basis (included in the Results section). For Hypothesis 5, the researcher

conducted a Pearson product-moment correlation between the mean score of the YFCY College Satisfaction Scale and the participant's mean score on the EOE-R. There was a difference between correlations on the YFCY Part 2 and the EOE-R by sex. Females had a significant negative correlation ($r = -.32, p < .01$), which implies that, for women, more positive outcome expectations related to more college satisfaction as expected. On the other hand, males had a non-significant correlation ($r = -.03, p > .05$). What can be gleaned is that the researcher did in fact obtain a significant moderate correlation in the expected direction for women but not for men. This study provided support for the idea that educational OEs and college satisfaction are related for women. The study also supports the domain-specific rationale for further study of college satisfaction in conjunction with educational OEs: that the college domain is related to educational OEs when the participants are female students at a four-year undergraduate college. The results partially supported hypothesis 11A of SCCT (Lent et al., 1994), which states that educational OE should be positively related to reinforcing consequences that one has directly experienced, specifically satisfaction with college.

This conceptualization, supported by the results for women, support the criterion validity of the EOE-R for women in that more positive educational OEs are related to more satisfaction with the college experience. It is unclear why this was not shown for men. For correlations between the EOE-R and the individual items, refer to Table 5. There were two significant correlations between the EOE-R and an item on the Campus Life Satisfaction section of YFCY and it was for the items covering satisfaction with classroom facilities and orientation for new students. According to the results of this portion of the study (which was

not hypothesized), services such as the library, counseling, and tutoring are not significantly correlated to college OE in this population.

Conclusion

The first conclusion the researcher draws from the research is that, by virtue of both hypotheses in Study 1 being completely supported, the EOE-R is indeed a solid, reliable one-factor measure of educational OE when applied to students at a four-year undergraduate university. This finding is interesting because most of the current research in the SCCT area focuses on measuring educational OE in a very subject-specific manner. While OEs are domain specific, the researcher proposes that college is indeed a domain and need not be broken down by interest or subject area in order to be valid.

In terms of validity as examined in Study 2, many of the researcher's hypotheses were supported as well. The criterion validity estimates in Hypothesis 5 supported the relation between educational OE and college satisfaction for women. This finding supports the utility of the EOE-R in its relation to that component.

The significant and positive correlation between the EOE-R and the CSEI supports the research discussed throughout the paper linking OEs and SE (e.g., Brown et al., 1989; Lent et al., 19997; Lent et al., 2000; Wheeler, 1983). In this case, even the factor scores of the CSEI and the EOE-R were significantly positively correlated (although Course Efficacy was significant for men only). This provides one positive sign of convergent validity for the EOE-R. Future research might include comparing the EOE-R to other measures of SE shown to be useful in assessing college students.

The decision to include a personality measure (MPQ) to obtain estimates of convergent validity was exploratory. The researcher found significant correlations in the

expected directions for two out of the four examined personality factors, although one (Stress Reaction) was only found in females. These results could be a springboard for much future investigation of personality in conjunction with not just educational OE but SCCT as a whole. What the researcher found is just one of many possibilities given that he used only one personality instrument for comparison.

Limitations

The study was not without its flaws. One flaw is the lack of diversity in the sample: the sample was 91% Caucasian. The research was conducted using students in a Midwestern university that does not have a very diverse enrollment and that shortcoming was reflected in the sample. It would be more helpful in terms of generalizability to multiple racial and ethnic student groups for the study to be normed with a sample that is more diverse.

Another limitation is the time constraint of the testing procedure, especially in Study 2. The researcher was attempting to collect a number of measures at once and the possibility of test fatigue could play a role. Other limitations include the reliance on measures collected at the same point in time; future researchers may want to include longitudinal designs in their studies.

Implications

The results of Study 1 and Study 2 have implications for the field of vocational psychology. The first of these is the results supporting the validity of the EOE-R. The EOE-R, even after adding items to the original EOE, is still a relatively short measure. Because educational outcome expectancies have been shown to be positively related to persistence in obtaining a degree (Tilley, 2002), scores on the EOE-R can be used to predict persistence. The EOE-R could be used as a screening instrument for identifying students at risk for

withdrawing from school. As an instrument that detects early possibility of future early withdrawal, the EOE-R can be useful within the context of career counseling, career-focused classes, and possibly as a screen at the start of each semester. The brevity of the EOE-R allows it to be administered in a relatively quick fashion so that if it were administered as part of a counseling session or in a classroom setting, it would not take up much of the time planned for other activities.

Another implication of the results is that the field still does not know much about the relations among personality factors and educational outcome expectancies. As noted earlier in the literature review, there are multiple ways of conceptualizing and measuring personality. This research appears to be the beginning of what could be a very interesting exploration of the numerous personality variables in relation to SCCT's concept of educational outcome expectancies. What is definitely clear is that the results from Study 2 indicate that further research is needed to determine what those relations are. Therefore, an implication of this research is the foundation for further research regarding personality and SCCT, especially outcome expectancies.

A third implication is that the mixed results in comparison with the satisfaction variables in this research indicates further pursuit may be necessary to determine the relation between educational OE and satisfaction. Based on theory, as noted in the introduction, there should be a relation between self-satisfaction and OE. The research conducted within this paper was conducted on the basis that educational OE should be related to educational self-satisfaction. The items addressing self-satisfaction on the EOE-R were high-loading (.68 and .67, respectively), indicating that there is a relation to be explored.

Future Directions for Research

As noted numerous times in the two preceding sections, the research conducted using the EOE-R and the MPQ perhaps raises more questions about the relation among factors of personality and educational OE than it answers. However, the research was intended as a starting point, as the prior research did not address personality and educational OE. The researcher recommends attempting to use the MMPI, the NEO-PI, and other measures of personality in order to gather more information about the relation between personality and educational OE.

Another part of the research that bears discussion is the lack of significant results for males on Hypotheses 5 of Study 2, which addresses college satisfaction and educational OE. There are no significant correlations for men alone in this sample. The entire sample showed significant correlations between the EOE-R and the YFCY measure of college satisfaction, but when measured separately by sex, only females showed significant correlations. The biggest question raised by these results is, “What is different here for women versus men?” There are numerous ways of addressing this question, such as societal (e.g., Is there something about this result that is related to how women versus men are taught to approach college?) or instrumental (Is there another way of measuring college satisfaction that provides a closer fit with how educational OE is being measured?).

Finally, as stated in the introduction and literature review, how self-efficacy has been studied is often an indicator for how outcome expectancies can be studied, given that so much more of the research on SCCT has been devoted to self-efficacy. Future research in a variety of areas on educational OE is made simpler because the EOE-R is such an easily administered and scored instrument. Personality is covered as a possibility above, but there

are still numerous areas in the vocational literature where SE has been studied but OE has not. This paper provides not only an instance of research on OE in areas SE is more prevalent but also validity estimates for an instrument with which to conduct such undertakings.

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Tables

Table 3
Factor Loading Matrix for the One-Factor Educational Outcome Expectancy Scale-Revised

Educational Outcome Expectancy item		M	SD	I	h ²	Item total r
33.	be able to solve problems more efficiently	4.97	1.03	.74	.55	.68
24.	make great progress toward being an expert in my field	5.17	1.03	.72	.52	.66
37.	demonstrate that I can succeed on my own	5.17	1.07	.71	.50	.66
32.	be better equipped to apply for and obtain a desired job	5.23	0.97	.70	.49	.63
35.	be more satisfied with myself	4.83	1.17	.68	.46	.65
23.	learn skills that would make me a good employee in the eyes of management	5.21	0.99	.68	.46	.63
18.	be more likely to influence others	4.95	1.09	.68	.46	.63
34.	feel better about myself	4.78	1.20	.67	.45	.64
17.	make my family proud	5.41	0.91	.65	.42	.59
15.	have opportunities to use my organizational skills	4.90	1.13	.64	.41	.60
7.	to have learned skills for my career	5.42	0.92	.64	.41	.57
20.	be seen as an important person	4.61	1.25	.63	.40	.92
14.	to have learned to express myself	4.60	1.24	.63	.40	.61
3.	be able to better serve other people	4.97	1.14	.60	.36	.54
16.	be more likely to give back to the community	4.62	1.26	.57	.32	.54
21.	learn necessary mechanical skills to help my career	4.77	1.33	.56	.31	.54
30.	have a wider variety of friends	4.53	1.29	.56	.31	.56
29.	be less likely to be stuck in a job I don't like	4.83	1.49	.53	.28	.50
4.	reduce the chance of being fired	4.64	1.26	.53	.28	.50
36.	be qualified to pursue an advanced degree (e.g. Masters, Ph.D.)	4.95	1.27	.51	.26	.46
2.	be able to make more money	5.17	1.06	.50	.25	.47
1.	be more competitive in the job market	4.92	1.18	.46	.21	.43
13.	be more likely to be friends with others who are college educated	4.31	1.37	.45	.21	.45
<u>Items with loadings below .40</u>						
8.	make more money than my parents	4.45	1.47	.39		

Table 3 (continued)

Educational Outcome Expectancy Item		M	SD	I	h^2	Item total r
40.	be viewed as qualified to create, design, and/or modify products in my career	4.01	1.60	.35		
38.	refine my artistic talent to create a better product (e.g. sculpture, performance, design)	3.57	1.07	.34		
39.	be able to design a new product (e.g. machinery, mechanical devices)	3.39	1.67	.27		
12.	be more likely to work outdoors	3.24	1.42	.23		
<u>Deleted "Process" Items</u>						
22.	advance my knowledge base	5.28	0.90			
6.	have intellectual stimulation	5.12	1.01			
5.	to have grown as a person	5.32	1.00			
10.	to have gained valuable insight into myself	4.99	1.12			
31.	understand my place in the world better	4.41	1.36			
28.	be more likely to find meaning in my life	4.31	1.49			

The main factor is labeled as "I." Item loadings .40 and above are bolded. Item loadings below .10 are not listed.

Table 4
Correlations for the Measures Used in Study 2 By Sex

Scale	EOE-R	CSEI	CSEI-1	CSEI-2	CSEI-3	MPQ-WB	MPQ-ACH	MPQ-STR	MPQ-CTR	MPQ-PE	MPQ-NE	MPQ-CST	YFCY-2
EOE-R		.33**	.30**	.31**	.28*	.30**	.18	.04	-.13	.34**	-.08	-.08	-.03
CSEI	.31**		.81***	.91***	.83***	.31**	.24*	-.27*	.15	.27*	-.02	.12	-.31**
CSEI 1	.09	.78***		.62***	.44***	.39***	-.34**	.23*	.20	.28*	-.31**	.20	-.41**
CSEI 2	.30**	.89***	.56***		.66***	.25*	.18	-.14	.15	.24*	-.10	.12	-.23*
CSEI 3	.39***	.81***	.37***	.64***		.15	.06	-.23*	.01	.16	-.05	-.02	-.16
MPQ-WB	.26*	.54***	.32**	.52***	.51***		.32**	-.50***	-.02	.74***	-.50***	-.05	-.15
MPQ-ACH	.13	.44***	.46***	.34**	.28**	.23*		-.09	.35***	.61***	.05	.34***	.04
MPQ-STR	-.27*	-.53***	-.27***	.45***	.50***	-.53***	-.10		-.11	-.22	.79***	.01	.26*
MPQ-CTR	-.01	.13	.36***	.05	-.09	.02	.29**	.08		.02	-.12	.80***	-.10
MPQ-PE	.38***	.56***	.35***	.55***	.48***	.75***	.64***	-.35***	.10		-.04	-.02	-.13
MPQ-NE	-.14	-.41***	-.38***	-.30**	-.34***	-.45***	.10	.76***	-.07	-.10		.01	.15
MPQ-CST	-.07	.01	.16	-.01	-.13	.03	.33***	.29**	.72***	.15	.20		-.02
YFCY-2	-.32**	-.56***	-.46***	-.47***	-.46***	-.43***	-.26*	.29	-.10	-.40***	.28**	-.08	

* $p < .05$, ** $p < .01$, *** $p < .001$. Correlations in the upper right diagonal are for males. Correlations in the lower left diagonal are for females. The EOE-R is the Educational Outcome Expectancy Scale-Revised (Springer et al., 2001); the CSEI is the College Self-efficacy Instrument (Solberg et al., 1993) sum score; CSEI 1 is Factor 1 (Course Efficacy) on the CSEI; CSEI 2 is Factor 2 (Social Efficacy) on the CSEI; CSEI 3 is Factor 3 on the CSEI (Coping With Others); MPQ-WB is the Well-Being primary scale on the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, in press); MPQ-ACH is the Achievement primary scale on the MPQ; MPQ-STR is the Stress Reaction primary scale on the MPQ; MPQ-CTR is the Control primary scale on the MPQ; The following are higher order factor scores for the MPQ: MPQ-PE is Positive Emotionality, MPQ-NE is Negative Emotionality, and MPQ-CST is Constraint; YFCY Pt. 2 (YFCY2) is the second half of the Your First College Year measure (Astin, 1993), also known as College Satisfaction. High scores on the EOE-R indicate positive expectations for one's college degree. The YFCY is reverse scored. Higher scores on the MPQ indicate strength of the particular personality trait.

Table 5
Individual Campus Life Satisfaction Item Correlations with EOE-R

Item	<i>N</i>	Total	<i>n</i>	Males	<i>n</i>	Females
YFCY 1a	173	-.20	79	-.15	92	-.28
YFCY 1b	167	-.13	79	-.03	86	-.27
YFCY 1c	165	-.12	75	-.06	88	-.17
YFCY 1d	91	-.10	49	-.20	41	-.15
YFCY 1e	166	-.09	76	-.11	88	-.13
YFCY 1f	157	.06	72	.01	83	.05
YFCY 1g	141	-.04	66	-.01	73	-.11
YFCY 1h	125	-.01	62	.02	62	-.12
YFCY 1i	43	.15	24	.24	18	-.05
YFCY 1j	161	-.05	78	-.01	81	-.11
YFCY 1k	164	-.17	74	-.19	88	-.20

Bolded correlations are significant at $p < .01$, italicized correlations are significant at $p < .05$.

*Some items were answered by participants that did not indicate sex.

Items for Campus Life Satisfaction

- a. classroom facilities
- b. computer facilities
- c. library facilities and services
- d. tutoring or other academic assistance
- e. academic advising
- f. student housing facilities
- g. financial aid services
- h. student health center/services
- i. psychological counseling services
- j. recreational facilities
- k. orientation for new students

CHAPTER 5: ADDITIONAL ANALYSES

The Additional Analyses section addresses analyses conducted beyond those covered by the hypotheses. The Additional Analyses include the alternate six-factor solution, and an examination of EOE-R scores by major.

Alternate Six-Factor Solution

A principal axis factor analysis was conducted using the Statistical Program for the Social Sciences – Student Edition (SPSS 10.0; 1999) specifying a promax rotation to determine if the factors were correlated. The analysis was an oblique rotation on the 28 remaining items of the EOE-R without specifying the number of factors. Six factors loaded above an Eigenvalue of 1, accounting for a total of 52.55% of the variance. The Eigenvalues were, in order, I=9.84, II=2.22, III=1.84, IV=1.27, V=1.11, VI=1.00. However, the correlations between the factors were high (ranging from .15 to .67) except for the third factor. The factor correlation matrix is presented in Table 6 below.

Table 6
Factor Correlation Matrix for Oblique 6 Factor Rotation

Factor	1	2	3	4	5	6
1						
2	.67					
3	.18	.20				
4	.59	.62	.21			
5	.57	.38	.15	.28		
6	.42	.36	.33	.41	.26	

An oblique rotation was used as the appropriate solution given the correlations among the factors. A six-factor oblique solution was examined for three reasons. First, the 6-factor solution allowed the researcher to explore the possibility of the RIASEC dimensions emerging. Second, at least three items loaded above .40 on all six factors. Third, all six

factors had Eigenvalues above 1.00. Table 7 presents the loadings for the six factors.

Table 7

Oblique Rotated 6-Factor Loading Matrix for the Educational Outcome Expectancy Scale -Revised

<u>Educational Outcome Expectancy item</u>		<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>
24.	make great progress toward being an expert in my field	.80	.49	.21	.47	.38	.41
23.	learn skills that would make me a good employee in the eyes of management	.75	.46	.20	.40	.46	.37
32.	be better equipped to apply for and obtain a desired job	.74	.47	.11	.55	.47	.30
7.	to have learned skills for my career	.74	.41	.10	.35	.50	.28
33.	be able to solve problems more efficiently	.70	.57	.18	.62	.41	.35
37.	demonstrate that I can succeed on my own	.69	.57	.16	.60	.35	.30
17.	make my family proud	.64	.55	--	.43	.35	.44
3.	be able to better serve other people	.62	.54	--	.31	.58	.11
18.	be more likely to influence others	.61	.67	--	.50	.32	.45
15.	have opportunities to use my organizational skills	.60	.69	.14	.37	.33	.28
21.	learn necessary mechanical skills to help my career	.56	.36	.30	.34	.35	.46
35.	be more satisfied with myself	.56	.58	.18	.87	.27	.37
36.	be qualified to pursue an advanced degree (e.g. Masters, Ph.D.)	.54	.40	.16	.35	.28	.12
34.	feel better about myself	.54	.57	.17	.87	.26	.42
20.	be seen as an important person	.53	.56	.22	.52	.30	.60
14.	to have learned to express myself	.51	.76	.17	.54	.20	.26
2.	be able to make more money	.49	.29	.13	.26	.82	.35
16.	be more likely to give back to the community	.49	.70	--	.40	.26	.19
29.	be less likely to be stuck in a job I don't like	.48	.45	.12	.48	.29	.21
4.	reduce the chance of being fired	.46	.49	.11	.33	.49	.28
1.	be more competitive in the job market	.45	.29	.16	.23	.71	.23
30.	have a wider variety of friends	.42	.58	.24	.54	.23	.29
13.	be more likely to be friends with others who are college educated	.32	.52	.19	.37	.20	.29
8.	make more money than my parents	.30	.25	.27	.27	.36	.47
40.	be viewed as qualified to create, design, and/or modify products in my career	.28	.21	.81	.21	.20	.33

Table 7 (continued)

Educational Outcome Expectancy Item		I	II	III	IV	V	VI
38.	refine my artistic talent to create a better product (e.g. sculpture, performance, design)	.24	.31	.72	.26	.10	.22
39.	be able to design a new product (e.g. machinery, mechanical devices)	.15	.17	.86	.17	.17	.35
12.	be more likely to work outdoors	--	.33	.24	.22	.10	.19
<u>Deleted "Process" Items</u>							
22.	advance my knowledge base						
6.	have intellectual stimulation						
5.	to have grown as a person						
10.	to have gained valuable insight into myself						
31.	understand my place in the world better						
28.	be more likely to find meaning in my life						

Item loadings .40 and above are bolded. Item loadings below .10 not listed.

In examining the structure matrix with factor loadings above .4, all of the factors except the third factor had items loading on all of the factors. In examining the third factor, it became clear that the factor was accounting for a mere three items that were very specific and did not load strongly on any other factor. All three items contained the word "design" and appeared to be either loading that way because of the specific expectations related to design or the word "design" itself. (It should be noted that no other items contained the word "design.") In summary, the items loaded similarly on the other five factors.

It appeared that the six-factor solution was not as viable as a one-factor solution for the following reasons. First, the items overlapped across factors, which meant the factors were not differentiated from one another (with the exception of the already-discussed third factor). Second, the percent of variance accounted for by the first factor in the oblique run (34.81%) was negligibly greater than that obtained by the single factor in a one-factor

solution (32.97%). Third, the scree plot on the oblique run revealed one factor with an Eigenvalue of 9.84 and a precipitous drop to the second factor (Eigenvalue of 2.22). The third, fourth, fifth, and sixth factors were bunched together with the second. Inspecting the great disparity between the first factor and the group of second through sixth factors indicated a one-factor solution.

When the researcher inspected the factor loadings on the factors, the findings lent even more credence to the one-factor solution. Factors two and four were essentially the same. The only difference, and a negligible one at that, was the slight difference in actual loadings among items loading on both factors. Item loadings for both factors five and six were a subset from the first factor. There did not appear to be any conceptual explanation for factors two, four, five, or six, even when considering combined RIASEC codes and item content. Factor six was correlated with factor one at .42 and, like factor four (loading with factor one at .59), appeared to be another subset of factor one. It did not appear that factors two, four, five, or six could be seriously considered as factors adding to the construct captured in factor one let alone separate factors that added interpretive information to the measure. They could not be differentiated from factor one in any meaningful way.

Factor three was the one factor that appeared to have a clear focus in that the only items loading on it were items with the word “design” in them. These three items had loadings of .72, .81, and .86. The items were “refine my artistic talent to create a better product,” “be able to design a new product,” and “be viewed as qualified to create, design, and/or modify products in my career.” There are two possible explanations for the factor: (a) the factor is actually capturing RIASEC “A” (artistic)-related interest in the form of

expectations regarding applying artistic skills developed in college or (b) the factor is separate from the others because of the presence of the word “design.”

In the case of (a), three items about a very specific career choice—all three items also contained the word “produce”—are not adding a substantial amount of interpretive power to the EOE-R. In fact, this possibility is even less likely because no other factor showed a specific RIASEC code association. Finally, the item from the original EOE intentionally created to capture probable expectations for “A”-type people (“to have grown as a person”), while not a part of the final factor analysis, did not load significantly on this factor in prior runs. The researcher concluded that a) is not the correct interpretation.

Regarding option (b), it is likely that one word that refers to a very specific skill—a word that did not appear in any of the other items—could sufficiently differentiate those items to the point that they loaded as a separate factor. The researcher found this to be a likely scenario, given that from a face validity standpoint, the items were already differentiated from the others. If this is true, there is negligible utility in attempting to interpret a factor whose only meaning appears to be linked to syntax rather than a related construct. Therefore the researcher chose to group the factor with the other four lower-loading factors as not providing meaningful proof for a multiple factor structure, especially when compared to factor one as discussed above. As a result, the data supported Hypothesis 1, that the EOE-R is a single factor measure with factor loadings above .40 for its items. (Factor loadings are provided in Table 3 of the Tables section.)

Scores By Major

The researcher also investigated the mean scores and standard deviations on the EOE-R by the majors of the participants. In total, the researcher coded 28 majors. Majors endorsed

by five or less participants were excluded. The results are presented below in Table 8. As illustrated by Table 8, the lower and upper bound 95% confidence interval is given. One can see in the table which majors had significantly different EOE-R mean scores.

Table 8
Means and Standard Deviations for EOE-R by Major

		EOE-R	SD	95% Confidence Interval for Mean	
	<i>ns</i>	Mean		Lower Bound	Upper Bound
1	17	4.70	.64	4.37	5.03
2	68	4.71	.70	4.54	4.88
3	5	4.44	.54	3.78	5.11
4	9	4.84	.53	4.44	5.25
5	9	5.02	.54	4.60	5.43
6	7	<i>5.16</i>	.36	4.83	5.49
7	26	5.20	.50	4.99	5.40
8	28	4.80	.68	4.54	5.07
9	5	4.31	1.07	2.98	5.65
10	7	5.41	.45	4.99	5.82
11	36	4.60	.67	4.37	4.83
12	41	4.58	.81	4.33	4.84
13	12	4.83	.64	4.42	5.24
14	26	4.44	.75	4.14	4.74
15	7	4.97	.51	4.49	5.45
16	17	4.89	.72	4.52	5.26
17	13	4.69	.74	4.24	5.14
18	56	4.76	.54	4.62	4.91
19	6	4.55	.79	3.72	5.37
20	33	4.90	.65	4.67	5.13
21	15	4.44	.67	4.07	4.81
22	10	5.21	.38	4.93	5.48
23	12	<i>5.12</i>	.53	4.79	5.46
24	16	4.74	.54	4.45	5.03
25	66	4.64	.57	4.50	4.78
26	23	4.91	.52	4.69	5.14
27	11	4.36	.77	3.84	4.87
28	9	5.23	.74	4.66	5.79
Total	590	4.76	.67	4.71	4.81

Key for Majors

1. Accounting
2. Engineering
3. Agricultural Education
4. Dietetics
5. Animal Science
6. Apparel Merchandising
7. Architecture
8. Art/Design
9. Advertising
10. Athletic Training
11. Biology/Genetics/Chemistry/Physics
12. Business
13. Business-Management
14. Mgt. Information Systems
15. Child and Family Services
16. Computer Science
17. Early Childhood Education
18. Elementary Education
19. English
20. Exercise Science
21. Finance
22. Industrial Technology
23. Interior Design
24. Journalism
25. Psychology
26. Marketing
27. Sociology
28. Sports Management

Italicized means have 95% confidence intervals that do not overlap and are higher than the following categories: 2, 11, 12, 14, 18, 21, 25, and 27.

Bolded means have 95% confidence intervals that do not overlap and are higher than the following categories: 14, 25

Mean scores ranged from 4.31 to 5.41. The highest mean (5.41) was found for Athletic Training majors, followed by Sports Management majors (5.23) and Industrial Technology majors (5.21). The lowest mean (4.31) was found for Advertising majors, followed by Sociology majors (4.36) and Finance majors (4.44). The low score was a little

over one standard deviation below the high score. It appears that at the greatest disparity point, scores on the EOE-R can differ by major. However, every major had a mean score above the median point for the scoring of the scale (i.e. the EOE-R was scored on a six-point Likert-type scale with items 1-3 indicating negative OEs and items 4-6 indicating positive ones). In other words, EOE-R mean scores indicated at least slightly positive college OEs for all majors.

Certain majors had 95% confidence intervals that were lower than and did not overlap with some of the higher 95% confidence intervals. Overall, groups 2 (Engineering), 11 (Biology/Genetics/Chemistry/Physics), 12 (Business), 14 (Management Information Systems), 18 (Elementary Education), 21 (Finance), 25 (Psychology), and 27 (Sociology) had intervals that were completely below those of groups 7 (Architecture), 10 (Athletic Training), and 22 (Industrial Technology). In addition, two of the 95% confidence intervals—14 (Management Information Systems) and 25 (Psychology)—were completely below those of groups 6 (Apparel Merchandising) and 23 (Interior Design).

CHAPTER 6. CONCLUSIONS

The first conclusion the researcher draws from the research is that, by virtue of both hypotheses in Study 1 being completely supported, the EOE-R is indeed a solid, reliable one-factor measure of educational OE when applied to students at a four-year undergraduate university. This finding is interesting because most of the current research in the SCCT area focuses on measuring educational OE in a very subject-specific manner. While OEs are domain specific, the researcher proposes that college is indeed a domain and need not be broken down by interest or subject area in order to be valid.

In terms of validity as examined in Study 2, many of the researcher's hypotheses were supported as well. The criterion validity estimates in Hypothesis 5 supported the relation between educational OE and college satisfaction for women. This finding supports the utility of the EOE-R in assessing that component.

The significant and positive correlation between the EOE-R and the CSEI supports the research discussed throughout the paper linking OEs and SE (e.g., Brown et al., 1989; Lent et al., 19997; Lent et al., 2000; Wheeler, 1983). In this case, even the factor scores of the CSEI and the EOE-R were significantly positively correlated (although Course Efficacy was significant for men only). This provides one positive sign of convergent validity for the EOE-R. Future research might include comparing the EOE-R to other measures of SE shown to be useful in assessing college students.

The decision to include a personality measure (MPQ) to obtain estimates of convergent validity was exploratory. The researcher found significant correlations in the expected directions for two out of the four examined personality factors, although one (Stress Reaction) was only found in females. These results could be a springboard for much future

investigation of personality in conjunction with not just educational OE but SCCT as a whole. What the researcher found is just one of many possibilities given that he used only one personality instrument for comparison.

The additional analyses explored the possibility of a six-factor structure. The idea for the structure was largely based on Holland's (1957, 1997) six-sided RIASEC code, a.k.a. the Holland Hexagon. However, as discussed in the previous chapter, the only one of the six factors examined that appeared to have any type of conceptual basis—outside the first factor—was the third factor, which most likely separated from the other factors because of a syntax difference (i.e. the words “design” and “produce” in each of the three items loading strongly on the factor). The experiment of running a six-factor solution only added credence to the one-factor solution used throughout this paper.

As for major, there is a wealth of possibilities in studying college OEs by major. It appears that the students in this sample in an athletic-related major (Sports Management, Athletic Training—as mentioned in Chapter 5—and even Exercise Science, which had a 4.90 mean) had relatively high mean scores. There are interesting possibilities for research in studying students in the athletic-related majors, especially attempting to find out what creates such high college OEs in this group. There does not appear to be a conceptual link among the lowest scores.

Overall, the conclusion from this paper is that the EOE-R is an internally consistent measure that can be construed as a unitary factor. Beyond that, the EOE-R shows construct validity estimates when paired with personality (the MPQ) and SE (the CSEI) as a result of support for Hypotheses 2 and 3. In addition, the researcher found some support for criterion

validity based on the correlation of the EOE-R score with a college satisfaction standpoint in Hypothesis 5.

Limitations

The study was not without its flaws. One flaw is the lack of diversity in the sample: the sample was 91% Caucasian. The research was conducted using students in a Midwestern university that does not have a very diverse enrollment and that shortcoming was reflected in the sample. It would be more helpful in terms of generalizability to multiple racial and ethnic student groups for the study to be normed with a sample that is more diverse.

Another limitation is the time constraint of the testing procedure, especially in Study 2. The researcher was attempting to collect a number of measures at once and the possibility of test fatigue could set in. Moreover, another limitation of the study is the cross sectional nature of the study.

Implications

The results of Study 1 and Study 2 have implications for the field of vocational psychology. The first of these is the results supporting the validity of the EOE-R. The EOE-R, even after adding items to the original EOE, is still a relatively short measure. Because educational outcome expectancies have been shown to be positively related to persistence in obtaining a degree (Tilley, 2002), scores on the EOE-R can be used to predict persistence. The EOE-R could be used as a screening instrument for identifying students at risk for withdrawing from school. As an instrument that detects early possibility of future early withdrawal, the EOE-R can be useful within the context of career counseling, career-focused classes, and possibly as a screen at the start of each semester. The brevity of the EOE-R allows it to be administered in a relatively quick fashion so that if it were administered as

part of a counseling session or in a classroom setting, it would not take up much of the time planned for other activities.

Another implication of the results is that the field still does not know much about the relationships among personality factors and educational outcome expectancies. As noted in the limitations and earlier in the literature review, there are multiple ways of conceptualizing and measuring personality. This research appears to be the beginning of what could be a very interesting exploration of the numerous personality variables in relation to SCCT's concept of educational outcome expectancies. What is definitely clear is that the results from Study 2 indicate that further research is needed to determine what those relations are. Therefore, an implication of this research is the foundation for further research regarding personality and SCCT, especially outcome expectancies.

A third implication is that the mixed results in comparison with the satisfaction variables in this research indicates further pursuit may be necessary to determine the relation between educational OE and satisfaction. Based on theory, as noted in the introduction, there should be a relation between self-satisfaction and OE. The research conducted within this paper was conducted on the basis that educational OE should be related to educational self-satisfaction. The items addressing self-satisfaction on the EOE-R were high-loading (.68 and .67, respectively), indicating that there is a relation to be explored.

Future Directions for Research

As noted numerous times in the two preceding sections, the research conducted using the EOE-R and the MPQ perhaps raises more questions about the relation among factors of personality and educational OE than it answers. However, the research was intended as a starting point, as the prior research did not address personality and educational OE. The

researcher recommends attempting to use the MMPI, the NEO-PI, and other measures of personality in order to gather more information about the relation between personality and educational OE.

Another part of the research that bears discussion is the lack of significant results for males on Hypotheses 5 of Study 2, which addresses college satisfaction and educational OE. There are no significant correlations for men alone in this sample. The entire sample showed significant correlations between the EOE-R and the YFCY measure of college satisfaction, but when measured separately by sex, only females showed significant correlations. The biggest question raised by these results is, “What is different here for women versus men?” There are numerous ways of addressing this question, such as societal (e.g., Is there something about this result that is related to how women versus men are taught to approach college?) or instrumental (Is there another way of measuring college satisfaction that provides a closer fit with how educational OE is being measured?).

Finally, as stated in the introduction and literature review, how self-efficacy has been studied is often an indicator for how outcome expectancies can be studied, given that so much more of the research on SCCT has been devoted to self-efficacy. Future research in a variety of areas on educational OE is made simpler because the EOE-R is such an easily administered and scored instrument. Personality is covered as a possibility above, but there are still numerous areas in the vocational literature where SE has been studied but OE has not. This paper provides not only an instance of research on OE in areas SE is more prevalent but also validity estimates for an instrument with which to conduct such undertakings.

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APPENDIX**Sample Items of the Educational Outcome Expectancy Scale-Revised**

1. be more competitive in the job market
2. be able to make more money
3. be able to better serve other people
4. reduce the chance of being fired
7. to have learned skills for my career